California High-Speed Train Project

Request for Proposal for Design-Build Services

RFP No.: HSR 11-16
Geotechnical Data Report
HYBRID Alternative
Ave 17 to Veterans Blvd
Part 2 of 2

Prepared for

CALIFORNIA
High-Speed Rail Authority

CALIFORNIA HIGH-SPEED TRAIN

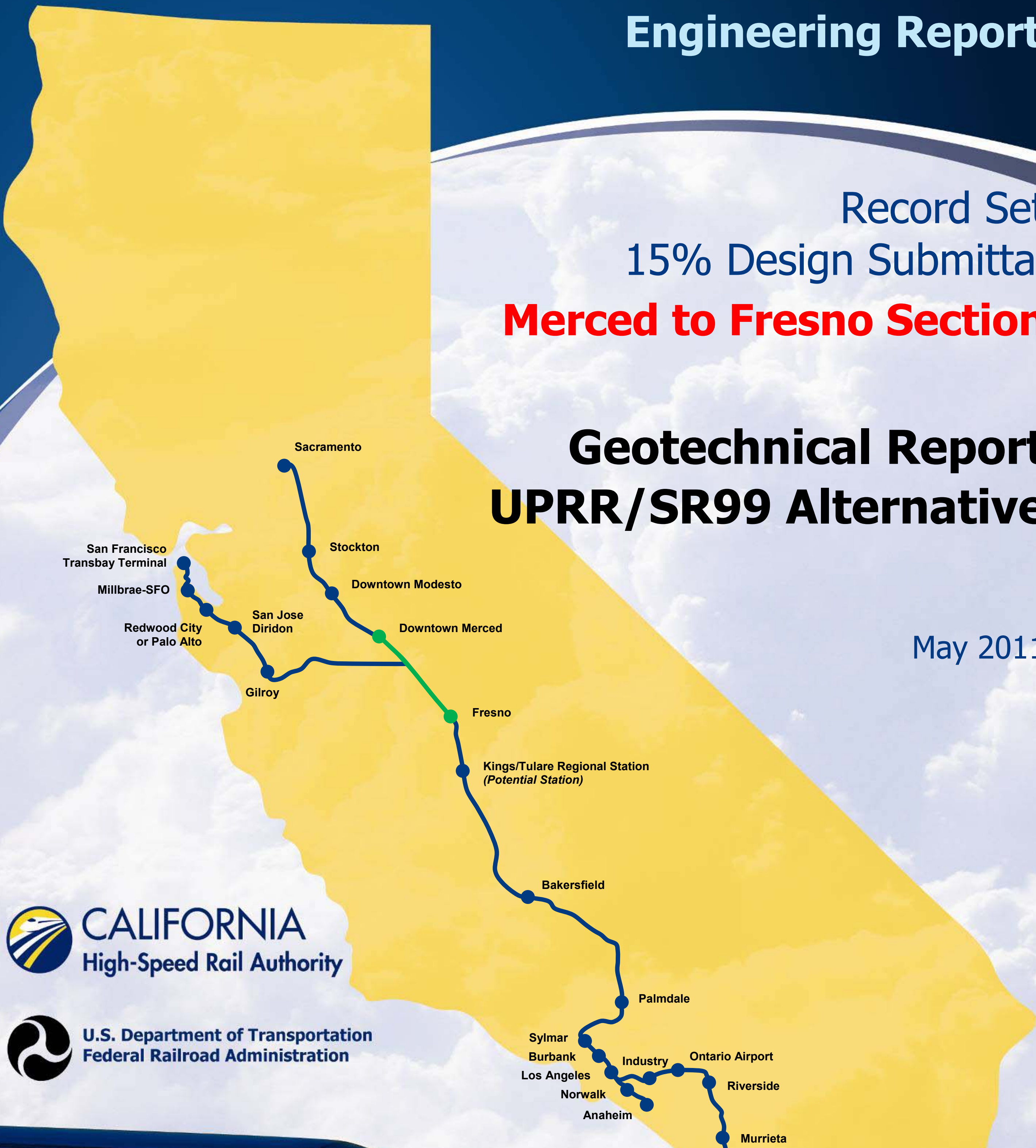
Engineering Reports

Record Set
15% Design Submittal

Merced to Fresno Section

Geotechnical Report
UPRR/SR99 Alternative

May 2011



CALIFORNIA
High-Speed Rail Authority

U.S. Department of Transportation
Federal Railroad Administration

PRELIMINARY GEOTECHNICAL REPORT

A2-UPRR/SR99 ALIGNMENT
CALIFORNIA HIGH-SPEED TRAIN PROJECT
(MERCED - FRESNO SECTION)

MERCED-MADERA-FRESNO, CALIFORNIA

For

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1.0 INTRODUCTION

This report presents the results of our preliminary geotechnical data analyses for the Merced – Fresno Section of California High-Speed Train Project located along State Route (SR) 99 within the following three Counties: Merced, Madera and Fresno in the southeastern portion of the Central Valley of California as indicated on the Project Location Map, Plate 1.

Based on the information published on the official website of The California High-Speed Rail Authority (Authority) (http://www.cahighspeedrail.ca.gov/), the Authority is proposing an 800 mile-long high-speed train system that would connect the San Francisco Bay Area and Sacramento in the north, through the Central Valley to Los Angeles, Orange County and San Diego in the south. This fast, safe and reliable system is forecast to carry 93 million passengers annually by the year 2030. Comprehensive program-level environmental studies to determine overall route and station locations were completed in 2005 and 2008. The November 2008 California voter approval of $9.95 billion in bonds helped to move the program forward and project-specific environmental studies are now underway.

The Merced to Fresno section of the High-Speed Train (HST) system is 60 miles long and includes the junction that permits high-speed trains to be routed either to Sacramento or San Francisco in the north. Proposed route alternatives generally follow either the Burlington Northern Santa Fe (BNSF), the Union Pacific (UP) railroads or a new alignment a few miles west of SR 99 throughout the section. HST stations are proposed in Downtown Merced and Fresno and a heavy maintenance and repair facility will be evaluated in the Merced to Fresno HST project area. The study of this report is mainly focused on the corridor which is 0.5 mile on both sides of SR 99 (1 mile wide). All Post Mile (PM) numbers referred to in this report are PM along SR 99.

The scope of services of Parikh Consultants, Inc. included the following main elements:

1. Research available literature and geotechnical studies within the project limits for use to identify and resolve geotechnical-related design and cost issues;
2. Discuss preliminary Geotechnical (Typical Foundation Design) recommendations based on available geotechnical data.

2.0 REVIEW OF EXISTING DATA

The subsurface conditions along the proposed alignment were studied by reviewing readily available existing subsurface data. A variety of published and unpublished references related to geotechnical, geologic, and seismic conditions along the alignment were reviewed. Subsoil information was collected mainly from the following three (3) sources:

1. Logs of Test Borings (LOTBs) in Caltrans As-Built plans for existing bridges along SR 99;
2. LOTBs from Geotracker (http://geotracker.swrcb.ca.gov/). Geotracker is a database and geographic information system (GIS) that provides online access to underground storage tank leak case data.
3. Several geotechnical investigations conducted for projects in the immediate vicinity of the alignment by Parikh Consultants, Inc.

Geotechnical data collected from previous investigations are listed in the table of Bridge and Reference Project List in Appendix A. The approximate project locations are shown in the Geologic Map and Site Plan (Plate 2). The projects are referenced from Fresno County moving north to Merced County. Details of the subsurface conditions encountered at each boring location are presented in Appendix A. Where appropriate, data from these explorations have been used to evaluate the subsurface conditions along the alignment and provide preliminary geotechnical engineering recommendations.

3.0 GEOLOGIC SETTING

3.1 Regional Geology and Soils

The Project Site is located in the southeastern portion of the Great Valley geomorphic province, a relatively flat alluvial plain composed of a deep sequence of sediments in a bedrock trough. The Great Valley is bounded on the west by the South Coast Ranges and on the east by the Sierra Nevada Mountains. Erosion of the South Coast Ranges and the Sierras has produced the sediments deposited in the Great Valley. Deposition in the Valley was mainly marine until the beginning of the Pliocene epoch (approximately 5.3 million years ago) when the Valley's seas retreated beyond the Carquinez Strait and were replaced by freshwater rivers and lakes. Today, the Valley is drained by the Sacramento River from the north and the San Joaquin River from the south. Geographically

and topographically, the Valley has been shaped by the Sacramento and San Joaquin Rivers and their tributaries. The rivers meet approximately 35 miles south of Sacramento and discharge through the Sacramento–San Joaquin Delta into San Francisco Bay and the Pacific Ocean.

A series of predominately nonmarine Tertiary clastic deposits rest upon granite and metamorphic basement along the northeastern margin of the San Joaquin Valley and Cretaceous marine sedimentary rocks at depth beneath the valley floor. Bedding within these sediements generally dip gently southwestward beneath the alluvial deposits which cover most of the valley bottom.

The North Merced pediment is an erosional surface of low relief that cuts across a variety of rock types with regional extent and is covered by a thin (usually less than 2 meters thick) deposit of coarse locally derived gravel (North Merced Gravel) that appears to have been deposited in a semiarid climate similar to that of the present. Subsequently, younger deposits were laid down on topography that had been deeply incised into the North Merced surface.

Soil development in these well-drained relatively uneroded arkosic parent materials of similar grain size distribution shows several trends with increasing age: (1) increased thickness of horizons and depth to freash parent material, (2) redder hues, (3) brighter chromas, (4) lower pH, (5) sharper definition of horizon boundaries and more horizons, and (6) sequential development of Cox, AC, cambric B, weak argiilic horizons and finally, a very strong argillic horizon.

3.2 Local Geology and Soils

General geologic features pertaining to the site were evaluated by reference to the Generalized Geologic Map of the Merced-Madera Area, Northeastern San Joaquin Valley, California (PLATE 1) in Late Cenozoic Stratigraphic Units, Northeastern San Joaquin Valley, California; U.S. by Marchand, D.E.; and Allwardt, A.; 1981; Geological Survey Bulletin 1470. Refer to Plates 2-1 through 2-22.

Soils mapping and related data for Madera Area (CA651) and Eastern Fresno Area (CA654) were acquired from the Natural Resources Conservation Service (NCRS) website (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx) by U.S. Department of Agriculture, NRCS (formerly the Soil Conservations Service). Refer to Plates 2-23 through 2-27.

In general, the mapped geologic units within the project corridor include (from oldest to youngest) the Turlock Lake, Riverbank, and Modesto Formations and post-Modesto Deposits.

The Modesto, Riverbank, and Turlock Lake Formations are all Pleistocene in age and comprise the major surface and near-subsurface stratigraphic and lithologic units in the project area. These three formations are similar because of the arkosic nature of their sand and silt fractions, a tendency toward upward coarsening sedimentation cycles, deposition as sequential overlapping alluvial terrace and fan systems, and probable glacial origin of most of the sediment. However, they may be distinguished from each other on the basis of soil profile development, topographic position and expression, local lithologic differences, and unconformities associated with buried soils. These stratigraphic units represent separate alluvial episodes, recorded by fill terraces opening westeward onto alluvial fans. Substantial time intervals between periods of aggradation are represented by buried paleosols.

Deposits younger than the Turlock Lake Formation occur as a series of nested terraces incised into older deposits near the Sierra Nevada foothills and opening westward onto alluvial fans. Each alluvial fan commonly spills out west of and over the next oldest fan, such that the youngest fans are found close to the San Joaquin River and the oldest fans have their heads near the foothills to the east. Toward the basin, depositional surfaces converge so that soils and superposition of deposits separated by buried soils are the primary distinguishing criteria. However, lateral and vertical lithologic variations within a single unit are frequently more pronounces than differences between units.

These formations are similar to one another in four respects: (1) the arkosic nature of their sand and silt fraction, (2) a tendency toward upward coarsening sedimentation cycles, (3) deposition as sequential overlapping alluvial terrace and fan systems, and (4) probable glacial origin of much of the sediment.

These formations differ in age, topographic expression, geomorphic position, post-depositional soil development, and geographic occurrence. Some minor lithological differences in present surface exposures are apparent although not necessarily significant: well-stratified silt and fine sand seem to be more commonly exposed in both units of the Turlock Lake Formation and the Modesto Formation than in the three units of the Riverbank Formation; gravel tends to be common in both members of the Modesto Formation and in the upper part of the lower Turlock Lake but

less abundant in the upper unit of the Turlock Lake and in the Riverbank. The gravel in the upper member of the Modesto is confined to relatively narrow channels and may reflect reworking of coarse fragments from older deposits.

Following are generalized descriptions of the four geologic units (from the oldest to the youngest) that are exposed within the project area. Refer to Plates 2-1 through 2-23 for the mapped extent of each unit within the project area.

Turlock Lake Formation: The Turlock Lake Formation overlies the North Merced Gravel Formation and forms extensive subsurface deposits throughout the San Joaquin Valley. It is the oldest unit exposed in the project area.

The Turlock Formation consists primarily of arkosic alluvium, mostly fine san, silt, and in places clay at the base grading upward into coarse sand and occasional coarse pebbly sand or gravel. The pebbles are of granitic as well as metamorphic, volcanic, and quartz-vein rocks and are in most places not as large nor as abundant as those in the underlying older units. The gravel and sand beds are typically massive, lenticular, cross-bedded, and difficult to trace laterally. The beds of finer grained sediment are commonly well-sorted, well stratified, and internally laminated. In many places the beds contain virtually unweathered grains of micas, feldspars, and mafic minerals. The Turlock Lake Formation slopes westward beneath the overlying younger alluvial deposits at a very gentle gradient of about 3 meters per kilometer. Its thickness varies from 50 to 230 meters in the Chowchilla area, thickening toward the west.

The Turlock Lake Formation was deposited between 1,000,000 and 600,000 years before present.

Riverbank Formation: The Riverbank Formation underlies the Modesto Formation and is composed of heterogeneous sediments that are poorly sorted with a variety of mineralogies. It consists primarily of sand containing some scattered pebbles, gravel lenses, and some interbedded fine sand and silt.

The Riverbank Formation consists primarily of arkosic sediment derived mainly from weathering and erosion the interior of the Sierra Nevada granite batholith. Its terraces and fans truncate or cut into Turlock Lake alluvium or fill in post-Turlock Lake gullies and ravines. They slope gently toward the west beneath fan deposits of early Modesto age.

The Riverbank Formation is similar to the overlying Modesto Formation in its distinguishable features but is more massively bedded with a few gradational bedding planes.

The Riverbank Formation was deposited between about 450,000 and 130,000 years before present.

Modesto Formation: The Modesto Formation and the associated post-depositional alluvium comprise the youngest unit of the alluvial fans that blanket much of the project area. These deposits cover a large part of the central San Joaquin Valley, and include fan, axial basin, and river channel deposits. In the project area, Modesto Formation sediments are generally a 10 to 30 feet thick veneer that shows little if any erosional modification. The Modesto Formation is a heterogeneous unit comprised of a wide spectrum of mineralogies, principally of granitic and metamorphic origins but include some volcanics. Modesto Formation is typically massive, without any distinguishable gradational bedding planes.

The Modesto Formation was deposited between 100,000 and 9,000 years before the present.

Post-Modesto Deposits: Holocene deposits that have been deposits upon the Modesto Formation in the northeastern San Joaquin Valley are located close to modern drainageways. Most small foothill streams have not built post-Modesto fans. In general, post-Modesto deposits are relatively thin and essentially unweathered, having been laid down within the past 8,000 years.

Weathering has produced soils on the geologic units described above. Detailed soil survey mapping has been completed over the entire project area. Soils units mapped within the southern portion of the project area (not covered by the USGS geologic map in Bulletin 1470) include the sandy loams and loams of the Delhi, Exeter, Hanford, Hesperia, and San Joaquin Series. Refer to Plates 2-23 through 2-27.

3.3 Regional Seismicity

The proposed corridor is located within the Great Valley seismo-tectonic province, a region of relative seismic quiescence and tectonic inactivity. This is bounded to the west by the seismically-active central Coast Ranges. The Coast Ranges are traversed by faults of the San Andreas Fault system, including the San Andreas Fault itself, as well as several other active faults.

These faults accommodate the movement between the Pacific and North American tectonic plates, which has been the source of a number of large, damaging earthquakes during historic time.

The Fault Map, Plate 3, shows the approximate position of the major fault zones, and the location of the Project Site in relation to them. The following table (Summary of Major Faults Affecting the Project Site) contains the estimated parameters for earthquakes on several known faults affecting the vicinity.

Summary of Major Faults Affecting the Project Site

Fault Name	**Fault ID**	**Type**	**Mmax**	**Distance** *KM / mile*
San Andreas Fault Zone	310, 311, 312	RLSS	7.9	97.2 / 60.7
Calaveras fault zone (Paicines Fault)	324	RLSS	7.4	88.0 / 55.0
Calaveras fault zone (Southern Calaveras section)	323	RLSS	7.4	89.0 / 55.6
Sargent Fault (Southeastern section)	405	RLSS	6.8	92.5 / 57.8
Quien Sabe Fault zone	149	RLSS	6.4	81.0 / 50.6
Ortigalita Fault	386, 387, 388, 389	RLSS	7.1	57.8 / 36.1
Owens Valley Fault	392, 391	RLSS	7.6	136.5 / 85.3

3.4 Regional Significant Active Faults

The active or potentially active faults of most significance to the project are the San Andreas Fault Zone and Ortigalita Fault. Earthquakes originating on both of these faults have caused severe ground shaking at the site in the past and have the potential to do so in the future.

San Andreas Fault: The alignment is located approximately 60.7 miles (97.2 KM) northeast of the San Andreas Fault. This fault is the largest active fault in California and extends from the Gulf of California to Cape Mendocino in northern California. The 1906 San Francisco Earthquake originated along the San Andreas Fault and had a magnitude of Mw 7.9. The United States Geological Survey's Working Group (WGCEP, 2003) have estimated the probability of at least one earthquake with magnitude greater or equal to 6.7, occurring along San Andreas Fault before 2031, to be 21%.

Ortigalita Fault: The Ortigalita fault is a 41 miles (66 KM) long, north-northwest-striking, right-lateral strike-slip fault located in the southern Diablo Range, 36.1 miles (57.8 KM) southwest of the project site. The surface trace of the Ortigalita fault extends from Panoche to southeast of Mount Stakes. The fault consists of two distinct geometric segments, separated by a 3.1-mile (5 KM) wide right-step across San Luis Reservoir. Much of the fault is delineated by persistent micro-seismicity, the fault is marked by numerous indicators of recent strike-slip faulting, such as deflected drainages, shutter ridges, side-hill benches, and vegetation lineaments. The Maximum Credible Earthquake (MCE) for the Ortigalita fault is Mw 6.9, with an effective recurrence of 1100 years.

4.0 SITE CONDITIONS

4.1 General Surface Conditions

The Great Valley province comprises a large, elongated, north-trending valley situated between the Coast Ranges on the west and the Sierra Nevada on the east. Much of the Great Valley is at elevations near sea level. Although most of the valley is rural, it does contain urban cities such as Fresno, Madera, Chowchilla and Merced within the project limits.

The project site is generally between 170 and 300 feet above mean sea level, with rolling terrain of varying grades with occasional exposures of non-marine sediments. Based on the published information (http://en.wikipedia.org/wiki/), along the project alignment from south to north, the average elevations are approximately 296 feet (90 M) at Fresno area, 271 feet (83 M) at Madera area, 240 feet (73 M) in Chowchilla area and 171 feet (52 M) in Merced area.

4.2 Surface-Water Hydrology

The San Joaquin River receives water from tributaries draining the Sierra Nevada and Coast Ranges, and except for streams discharging directly to the Sacramento–San Joaquin Delta, is the only surface-water outlet from the project area. The other main waterways within the project area are the Chowchilla Rive and the Fresno River. The surface-water distribution systems within the project area also include numerous creeks, canals and laterals.

4.3 General Subsurface Soil Conditions

Soils throughout the project corridor are generally uniform. Alluvial sediments characteristics are layers of silty sand, clayey sand, and sandy silt, underlain by poorly graded sand (generally derived from erosion of decomposed granite) and sandy silt.

The project is located in the southeastern part of the San Joaquin Valley. Alluvial, Pleistocene non-marine, and other non-marine deposits of the eastern part of the valley were derived primarily from the weathering of granitic intrusive rocks of the Sierra Nevada, with lesser contributions from the sedimentary and metasedimentary rocks of the foothills. In the eastern part of the valley, sediments derived primarily from the Sierra Nevada are highly permeable, medium-to coarse-grained sands with low total organic carbon, forming broad alluvial fans where the streams enter the valley. These deposits generally are coarsest near the upper parts of the alluvial fans and finest near the valley trough. Dune sand consists of well-sorted medium-to-fine sand, as much as 140 feet thick.

Stream-channel deposits of coarse sand occur along the San Joaquin River and its major east side tributaries. In the valley trough, the stream-channel deposits are flanked by basin deposits of varying extent. The basin deposits are interbedded lacustrine, marsh, overbank, and stream-channel sediments deposited by the numerous sloughs and meanders of the major rivers. The soils that have developed on these deposits generally have a high clay content and low permeability

4.4 General Groundwater Conditions

Based on the USGS Water-Resources Investigation Report 97-4205, groundwater is generally within 10 to 50 feet of the land surface in the project area; this coincides roughly with the findings from review of existing geotechnical data in the project area. Please refer to Plate 4, General Groundwater Conditions for more details.

5.0 PRELIMINARY EVALUATIONS AND RECOMMENDATIONS

The following preliminary evaluation and recommendations are based upon our understanding of the proposed construction and the findings from review of existing data. If the above-described project conditions are incorrect or changed subsequently, or subsurface conditions encountered

during construction are significantly different from those reported, Parikh Consultants should be notified and these discussions and recommendations must be re-evaluated to make appropriate revisions. These preliminary discussions and recommendations are to assist in defining the overall design program. Detail studies will be required during the Design Phase of the project.

5.1 Geologic Hazards

The following subsections discuss the potential geologic hazards that might exist in the project area based on the literature search and research of the existing data. More detailed studies for the California High-Speed Train program should be undertaken in the design phase. The discussions in the following sections are therefore preliminary.

5.1.1 Fault Rupture

A surface fault rupture occurs when an active fault intercepts and offsets the earth's surface. The State of California has delineated zones around active faults in accordance with the Alquist-Priolo Earthquake Fault Zone Act of 1971 in order to mitigate for the effects of surface faulting. No portion of the project alignment is within a State of California Alquist-Priolo Earthquake Fault Zone, and no active faults are known to cross the alignment. Therefore, the risk of fault rupture occurring across the alignment is considered low.

5.1.2 Seismic Ground Shaking

During an earthquake, seismic waves are produced that radiate in all directions from the source fault rupture. Seismic waves can produce strong ground shaking that is typically strongest near the source fault and attenuates as the waves move away from the source. The severity of ground shaking is controlled by the interaction of source magnitude, distance travelled, and the type, thickness, and condition of underlying geologic materials. Areas underlain by unconsolidated, recent alluvium or fill may amplify the amplitude and duration of strong ground motions.

The strongest ground shaking at the project area is expected to be as a result of an earthquake originating on the San Andreas Fault (Mmax=7.9) or the Ortigalita Fault (Mmax=7.1) at a distance of about 60.7 miles and 36.1 miles, respectively. Both of these faults can produce a peak horizontal ground acceleration (PGA) of approximately 0.06g at the project site based on our

preliminary evaluation. This potential ground motion value is relatively low compared with more active regions of California. Therefore, strong earthquake ground shaking is not considered to be a significant seismic hazard at the project site. Nevertheless, severe ground shaking could cause structural damages and the derailment of moving or stopped trains, resulting in injuries or deaths. Since the consequences could be significant, it is recommended that all structures, foundations and embankments must be designed per project specifications for the maximum accelerations estimated based on detailed geotechnical investigations during the design stage.

Measures to reduce ground shaking impacts may include ground improvement such as deep soil mixing, jet grouting, soil densification, pile supported structures, etc. The use of specific measures would depend on soil type and stratigraphy, which would be determined at the project design stage.

5.1.3 Liquefaction

Liquefaction is a phenomenon in which saturated cohesionless soils are subject to a temporary but essentially total loss of shear strength under the reversing, cyclic shear stresses associated with earthquake shaking. Submerged cohesionless sands and silts with low relative density are the type of soils usually susceptible to liquefaction. Clays are generally not susceptible to liquefaction.

The formations mapped in the project area are Tertiary and Quaternary alluvial deposits. These are likely to contain deposits of sand and silt, which are potentially liquefiable when saturated. However, a PGA of 0.06g is not likely to result in liquefaction of soils at the project site based on the geotechnical data collected. We recommend that the liquefaction potential should be further evaluated based on the more detailed geotechnical investigation at the design phase.

5.1.4 Lateral Spreading

Lateral spreading refers to lateral ground failure/movement that occurs at sites underlain by liquefied soil. It is generally believed that the magnitude of lateral movement of liquefaction induced lateral spreading will be small at sites with surface gradients less than about one percent where no free face (an abrupt difference in elevation) is present. The project site has a low liquefaction potential and relatively flat topography which means there are minimal cuts and excavation of slopes necessary for the project. Therefore, seismically-induced liquefaction and

lateral spreading are not considered potential hazards along the project alignment. However, there are river/stream crossings that are subject to such conditions, therefore site specific studies should address such impacts.

5.1.5 Slope Instability

Stability of slopes depends on steepness of the slope, strength of underlying soils, and pore pressures in the soil. The relatively flat terrain along the majority of the proposed alignment minimizes landslide potential. There may be potential slope stability issues at the banks of rivers/creeks that will be crossed with bridges. New slopes may be created at the approaches to overcrossing structures, but these embankments will generally be made of engineering fills. Significant excavating, grading, or fill placement during construction could introduce temporary slope stability hazards at bridge sites or along the track.

5.1.6 Subsidence

Tectonic subsidence, which occurs over a long period of time is currently occurring as a result of large scale sediment loading due to erosion of the Sierra Nevada. However, this subsidence is very gradual, occurring over an extremely long period of time relative to the project life. Thus, tectonic subsidence is not considered to be a hazard along the project alignment. Subsidence due to oxidation or dewatering organic-rich soil is not expected to be a problem along the project alignment since there are no significant thicknesses of organic-rich sediments present.

In general, subsidence due to rapid sedimentation is not considered a likely mechanism for triggering subsidence along the project alignment based on the regional geology. Collapse of subsurface cavities in underlying soils or bedrock can result in localized areas of subsidence. The sediments and rocks that comprise the various Tertiary and Quaternary stratigraphic along the project alignment are sands, silts and clays. These deposits are not considered to contain cavities that could collapse and result in surface subsidence.

Subsidence can also result from construction activities, such as withdrawal of water from the subsurface soils and loads exerted by construction such as mass fill placement and new heavy structures. Subsidence due to groundwater withdrawal has occurred in the past in the San Joaquin Valley and continues in some localities today. However, areas that are known to have this type of

subsidence are well to the south and east of the site and it is not considered a hazard in the project site. Changes in groundwater use within and adjacent to the site in the future may result in potential subsidence.

5.1.7 Collapsible Soils

Collapsible soils consist of loose, dry, low-density materials that collapse and compact under the addition of water or excessive loading. These soils are distributed throughout the southwestern United States, specifically in areas of young alluvial fans, debris flow sediments, and loess (wind-blown sediment) deposits. Soil collapse occurs when the land surface is saturated at depths greater than those reached by typical rain events. This saturation eliminates the clay bonds holding the soil grains together (Mulvey, 1992). Similar to expansive soils, collapsible soils can result in structural damage such as cracking of the foundation in response to settlement of the ground surface. More detailed site-specific study is needed to evaluate the level of hazard of potential collapsible soils in the design phase.

5.1.8 Expansive Soils

Expansive soils are clay-rich soils that have the ability to swell and shrink with wetting and drying. The shrink-swell capacity of expensive soils, combined with seasonal variations in moisture, can result in differential settlement of foundations and embankments. Based on the subsoil information collected, clays and clayey soils were encountered in some portions of the project site, especially within Merced County. Even some silts and clays though intermixed with granular soil, could have expansion potential. However, the limited extent of these potentially expansive soils within the project area indicates the hazard is relatively low. A detailed site-specific geotechnical investigation is needed to determine the level of expansion potential for specific locations of the site.

5.1.9 Erosion

Wind and water are the primary agents of erosion. Wind erosion is not considered to be a substantial hazard within the site region because the surface deposits are older and more consolidated and not as susceptible to wind erosion. However, much of the project alignment crosses agricultural lands in production, which may at times be more susceptible to erosion when

the soils are exposed or tilled. The relatively flat terrain along the project alignment reduces the potential for water erosion impacts except along the rivers/creeks. If the bridge structures are designed with footings within the creeks/rivers, there is the potential for erosion and scour to affect them.

5.2 Natural Chemical Hazards – Corrosion Potential

Several parameters influence soil corrosivity, including soil resistivity, degree of saturation, pH level, dissolved salts, redox potential and total acidity. Soil resistivity is a measure of the ability of a soil to conduct electrical current and is usually related to the amount of soluble salts in the soil. Low resistivity generally indicates a more corrosive condition. Another factor influencing corrosion potential is pH level. Soils or water with pH values below pH 7 indicate acidic conditions, and hence, a corrosive environment for metals and concrete. Chloride and sulfate concentrations in soil also can have a corrosive effect on the buried utilities and foundation elements.

The only corrosion testing data available is from the Campus Parkway Overhead (BR. No. 39-0249 L/R) project done by Parikh Consultants in March 2010. The project site is in Merced County at approximate PM 12.50. A summary of the corrosion test results is presented in the following table.

Summary of Corrosion Test Results

Boring	Depth (ft)	pH	Minimum Resistivity (ohms-cm)	Sulfate (ppm)	Chloride (ppm)
A-07-003	6	8.07	2280	17.8	8.3

Just for reference, per Caltrans Corrosion Guidelines, September 2003, Version 1.0, for structural elements, Caltrans considers a site to be corrosive if one or more of the following conditions exist for the representative soil and/or water samples taken at the site:

- Chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater, or the pH is 5.5 or less.

Based on the corrosion test results, the subsoils at the referenced boring location are not considered corrosive per Caltrans corrosion design guidelines. More detailed study should be done at the

design phase to evaluate the soil corrosivity at each structure location. Special considerations and guidelines for foundations and underground facilities in corrosive environments should be included in the design documents. This is an important aspect of the foundation design since structures at many of the locations may require steel piles for foundation support.

5.3 Foundation Support for Bridge Structures

The study performed for this report focuses on improvements within the one-mile wide project corridor that extends 0.5 mile on both sides of SR 99. All Post Mile (PM) numbers referenced in this report are the PM along SR 99 per Caltrans. Caltrans As-Built LOTBs for existing bridges along SR 99 were the main references in summarizing subsurface conditions. Several project references within the studied corridor were collected from Parikh Consultants, Inc. project library and from Geotracker database. These were also referred to in making preliminary recommendations.

The feasibilities of several foundation systems were evaluated for bridge structures at locations of the existing highway bridges along the project corridor based on the geotechnical information collected. We evaluated three (3) commonly used pile foundations types for preliminary design considerations. These include Cast-In-Drilled-Hole (CIDH) pile, PreCast/PreStressed (PC/PS) Concrete pile, and driven steel pile (open-ended pipe pile or H pile).

5.3.1 Bridge Structures - Fresno County

PM 024.42 (SR 99)
Reference: As-Built LOTB (Boring Nos. B-1, B-2, B5 and B8 drilled in 1953, and Boring Nos. B-1, B-2 and B3 drilled in 1990) for Clinton Avenue OC (Bridge No. 42-0183), (Caltrans, 1993), existing grade elevation: 292 feet ± to 299 feet ±.

The subsoils generally consist of medium dense to dense sand in the upper 15 to 30 feet (SPT blow counts range from 11 to 50+) followed by dense to very dense sand/silty sand (SPT blow counts range from 65 to 100+) to the maximum explored depth of 70 feet (B2, March 1990) below ground surface. Groundwater was not encountered during field investigation to a depth of 55 feet in September 1953 (maximum explored depth: 55 feet). Groundwater was not indicated in the LOTBs of March 1990 field exploration.

Driven PC/PS concrete piles are recommended because they are both feasible and cost effective. If higher bearing capacity is required and the pile must be driven through the very dense sand layer, then steel pile is preferred to avoid the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 55 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 026.22 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1 & B-3) for SR 99 On-Ramp By Dakota (Bridge No. 42-0148) (Caltrans, 1959)**,** existing grade elevation: 290 feet ±.

The subsoils generally consist of medium dense to dense sand in the upper 60 feet (SPT blow counts range from 11 to 50+) followed by very stiff to hard clayey silt (SPT blow counts range from 20 to 50) to the maximum explored depth of 70 feet below ground surface. Groundwater was not encountered during field investigation in February 1957.

CIDH piles of 16-inch diameter were used for the existing bridge. Considering lateral capacity and/or uplift requirement and possible difficult driving conditions, CIDH pile is recommended for this site. But steel piles may also feasible depend on the structural loads. An allowable bearing capacity of 100 tons is recommended for 2 feet diameter CIDH pile with embedded pile length of 55 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 026.55 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1, B-5 & B-6) for Ashlan Avenue OC (Bridge No. 42-0140) (Caltrans, 1959), existing grade elevation: 292 feet ± to 293 feet ±.

The subsoils generally consist of medium to dense sand (SPT blow counts range from 20 to 50+) in the upper 70 feet followed by hard sandy silt to a maximum explored depth of 75 feet below ground surface. Groundwater was not encountered during field investigation in February 1957.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 60 feet for preliminary

estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 027.31 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1 and B-3) for Biola Junction (Bridge No. 42-0131) (Caltrans, 1959), existing grade elevation: 294 feet ±.

The subsoils generally consist of medium dense to very dense sand to silty sand (SPT blow counts range from 29 to 90) with interbedded layers of very stiff silt pockets to a depth of approximately 40 feet, underlain by very dense silty sand to hard sandy silt (SPT blow counts range from 29 to 42) to the maximum explored depth of 65 feet below ground surface. Groundwater was encountered at elevation 239 feet ± (56 feet ± below ground surface) in February 1957.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 58 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 028.10 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-2, B-3 & B-4) for Shaw Avenue OC (Bridge No. 42-0130) (Caltrans, 1959), existing grade elevation: 293 feet ± to 296 feet ±.

The subsoils generally consist of medium dense to dense sand (SPT blow counts range from 23 to 33) with interbedded very stiff silt pockets in the upper 54 feet, followed by dense silty sand (SPT blow counts range from 36 to 48) to the maximum explored depth of 60 feet below ground surface. Groundwater was not encountered during field investigation in February 1957.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 55 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 028.40 (SR 99

Reference: As-Built LOTB (Boring Nos. B-1, B-3 & B-11) for Herndon Canal (Bridge No. 42-0129) (Caltrans, 1958), existing grade elevation: 300 feet ±.

The subsoils generally consist of dense sand/silty sand (SPT blow counts range from 40 to 42) in the upper 10 feet, underlain by very stiff sandy silt (SPT blow counts range from 26 to 30) to a depth of approximately 40 feet, followed by dense sand/silty sand (SPT blow counts range from 32 to 40) to a maximum explored depth of 55 feet below ground surface. Groundwater was not encountered during field investigation in February 1957.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 60 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 030.48 (SR 99)

Reference: As-Built LOTB (Boring No. B-1) for Grantland Avenue UC (Bridge No. 42-0127) (Caltrans, 1958), existing grade elevation: 291 feet ±.

The subsoils generally consist of very loose sand with gravel (SPT blow count 3) in the upper 10 feet, underlain by dense sand/silty sand (SPT blow counts range from 32 to 34) with few interbedded hard sandy silt lenses to the maximum explored depth of 45 feet below ground surface. Groundwater was not encountered during field investigation in February 1957.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 50 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 030.99 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1, B-4) for Herndon Canal (Bridge No. 42-0126) (Caltrans, 1958), existing grade elevation: 285 feet ± to 287 feet ±.

The subsoils generally consist of medium dense to dense silty sand with gravel (SPT blow counts range from 15 to 43) in the upper 20 feet, underlain by medium dense to very dense sand/silty sand (general SPT blow count of 17 to 70) with few interbedded stiff to very stiff sandy silt lenses to a maximum explored depth of 50 feet below ground surface. Groundwater was not encountered during field investigation in February 1955.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 60 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

5.3.2 Bridge Structures - Madera County

PM 00.08 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1, B-2, B-6 & B-7) for San Joaquin River (Bridge No. 41-0008) (Caltrans, 1987), existing grade elevation: 225 feet ± to 264 feet ±.

The subsoils generally consist of dense sand to hard sandy silt (SPT blow counts range from 34 to 45) with intermediate layers of very stiff sandy clay to the maximum explored depth of approximately 90 feet below ground surface. Groundwater was encountered at elevation 251 feet ± (3 feet ± below ground surface) in July 1984. Further field investigation might be required to analyze liquefaction potential due to high ground water table.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 75 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 00.99 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-2 & B-4) for Avenue 7 OC (Bridge No. 41-0064) (Caltrans, 1962), existing grade elevation: 284 feet ± to 285 feet ±.

The subsoils generally consist of very dense sand (generally SPT blow count more then 70) up to a depth of approximately 15 feet, underlain by dense to very dense sand to silty sand layers (SPT blow count of 34 to 45) to the maximum explored depth of approximately 60 feet below ground surface. Groundwater was not encountered during field investigation in August 1961.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 55 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

<u>PM 002.23 (SR 99)</u>

Reference: As-Built LOTB (Boring Nos. B-1 & B-6) for Avenue 8 OC (Bridge No. 41-0060) (Caltrans, 1963), existing grade: 281 feet ±.

The subsoils generally consist of medium dense sand (generally SPT blow count range from 15 to 23) with occasional silty sand layer up to a depth of approximately 30 feet, underlain by very dense sand (generally SPT blow count range from 58 to 100) up to a maximum explored depth of about 45 feet below ground surface. Groundwater was not encountered during field investigation in March 1961.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 50 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 03.56 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-2 & B-4) for Avenue 9 OC (Bridge No. 41-0063) (Caltrans, 1962), existing grade elevation: 274 feet ± to 276 feet ±.

The subsoils generally consist of medium dense to dense sand to silty sand (SPT blow counts range from 24 to 43) with intermediate layers of sandy silt to a maximum explored depth of about 60 feet

below ground surface. Groundwater was not encountered during field investigation in June 1961.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 58 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 06.15 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-3 & B-4) for Avenue 11 OC (Bridge No. 41-0061) (Caltrans, 63), existing grade elevation: 268 feet ± to 271 feet ±.

The subsoils generally consist of medium dense to dense sand (SPT blow counts range from 16 to 31) with few pockets of loose silty sand to a depth of approximately 30 feet, underlain by dense to very dense sandy silt layers (SPT blow count of 35 to 100) to the maximum explored depth of approximately 80 feet below ground surface. Groundwater was not encountered during field investigation in August 1961.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 60 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 07.28 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-3, B-7 & B-12) for Cottonwood Creek (Bridge No. 41-0065) (Caltrans, 1967), existing grade elevation: 270 feet ±.

The subsoils generally consist of medium dense silty sand (SPT blow counts range from 18 to 27) with pockets of soft to stiff sandy silt and loose sand to the maximum explored depth of approximately 70 feet below ground surface. Groundwater was encountered at elevation 243 feet ± to 257 feet ± (27 feet ± to 9 feet ± below ground surface) in August 1961.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An

allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 65 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 07.46 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1 & B-3) for Avenue 12 OC (Bridge No. 41-0066) (Caltrans, 67), existing grade elevation: 269 feet ± to 272 feet ±.

The subsoils generally consist of medium dense to dense sand to silty sand (SPT blow counts range from 17 to 35) with intermediate very stiff sandy silt layers and pockets of loose sand to the maximum explored depth of approximately 70 feet below ground surface. Groundwater was encountered at elevation 249 feet ± to 253 feet ± (20 feet ± to 19 feet ± below ground surface) in September 61.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 55 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 08.72 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-2, B-4 & B-5) for Avenue 13 OC (Bridge No. 41-0062) (Caltrans, 1967), existing grade elevation: 265 feet ± to 267 feet ±.

The subsoils generally consist of loose sand (SPT blow counts range from 6 to 9) to a depth of approximately 6 feet, underlain by medium dense to dense sand to silty sand layers (SPT blow count of 24 to 36) with intermediate very stiff sandy silt layers to the maximum explored depth of approximately 70 feet below ground surface. Groundwater was not encountered during field investigation in August 1961.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 55 feet for preliminary estimation. Deep borings at the proposed bridge

site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 09.74 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1, B-2 & B-3) for South Madera OC (Bridge No. 41-0046) (Caltrans, 2007), existing grade elevation: 267 feet ±.

The subsoils generally consist of medium dense to dense sand (SPT blow counts range from 21 to 35) with intermediate very stiff to hard sandy silt and silty clay layers to the maximum explored depth of approximately 70 feet below ground surface. Groundwater was encountered at elevation 230 feet ± (37 feet ± below ground surface) in February 01.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 55 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 010.27 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1, B-3 & B-4) for Route 145/99 Separation (Bridge No. 41-0047) (Caltrans, 58), existing grade elevation: 268 feet ±.

The subsoils generally consist of loose sand (SPT blow counts range from 6 to 8) up to a depth of about 20 feet, underlain by medium dense to dense sand to clayey sand (SPT blow count of 23 to 35) with intermediate very stiff silt layers up to a maximum explored depth of about 45 feet below ground surface. Groundwater was considered to be at or below elev. 226 feet ± (42 feet ± below ground surface) in May 1954.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 55 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 010.84 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-3, B-4) for West Yosemite Avenue (Bridge No. 41-0049) (Caltrans, 1954), existing grade elevation: 268 feet ±.

The subsoils generally consist of medium dense sand to silty sand with intermediate very stiff silt layer (SPT blow counts range from 19 to 22) and few pockets of very loose sand to the maximum explored depth of approximately 48 feet below ground surface. Groundwater was encountered at elevation 220 feet ± (48 feet ± below ground surface) in April 1954. Further field investigation might be required to analyze liquefaction potential due to soil types, densities and ground water table.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 55 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 011.01 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1& B-4) for West Fourth Street OC (Bridge No. 41-0050) (Caltrans, 1958), existing grade elevation: 267 feet ±.

The subsoils generally consist of medium dense sand with intermediate very stiff silt layers (SPT blow counts range from 17 to 27) up to a maximum explored depth of 70 feet below ground surface. Groundwater was encountered at elevation 220 feet ± (47 feet ± below ground surface) in April 1954. Further field investigation might be required to analyze liquefaction potential due to soil types, densities and ground water table.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 56 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 011.09 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1& B-5) for Madera UP (Bridge No. 41-0051)

(Caltrans, 58), existing grade elevation: 267 feet ± to 269 feet ±.

The subsoils generally consist of loose to medium dense sand layer (SPT blow counts range from 12 to 14) with few pockets of very loose sand and soft silt up to a maximum explored depth of 80 feet below ground surface. Groundwater was encountered at elevation 224 feet ± (45 feet ± below ground surface) in April 1954. Further field investigation might be required to analyze liquefaction potential due to soil types, densities and ground water table.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 60 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 011.65 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-3, B-4 & B-6) for Fresno River Bridge (Bridge No. 41-0052) (Caltrans, 1989)**,** existing grade elevation: 256 feet ± to 271 feet ±.

The subsoils generally consist of stiff to very stiff sandy clay to medium dense clayey sand (SPT blow counts range from 15 to 20) up to a depth of about 20 feet, underlain by medium dense sand layer (SPT blow count of 22 to 30) to the maximum explored depth of approximately 65 feet below ground surface. Groundwater was encountered at elevation 232 feet ± (24 feet ± below ground surface) in July 1987.

Based on the Boring MW-6 from the Geotracker database (T0603900177) at PM 11.80, the upper 65 feet soil conditions are generally consistent with the findings of Caltrans LOTBs at PM 11.65 except a very dense sand/silty sand layer (SPT blow count of 100+), about 10 feet thick, was encountered at the depth of 72 feet followed by dense to medium dense sand/silty sand to the maximum explored depth of 125 feet. Groundwater was encountered in MW-6 at the depth of 110 feet below the existing ground surface on March 21, 2005.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. If higher bearing capacity is required and the pile must be driven through the very dense sand layer (at the depth of 72 feet in MW-6), then the steel pile is preferred to avoid the possible difficult driving

conditions. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 55 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 012.13 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1, B-2 & B-3) for Cleveland Avenue OC (Bridge No. 41-0053) (Caltrans, 1996), existing grade elevation: 248 to 269 feet ±.

The subsoils generally consist of medium dense sand with trace silt and clay (SPT blow counts range from 14 to 18) to a depth of approximately 60 feet, underlain by medium dense silty sand layer (SPT blow count of 16 to 22) to the maximum explored depth of approximately 45 feet below ground surface. Groundwater was not encountered during field investigation in July 1993.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 60 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 012.75 (SR 99)

Reference: As-Built LOTB (Boring No. B-1) for Avenue 16 OC (Bridge No. 41-0058) (Caltrans, 1958), existing grade elevation: 260 feet ±.

The subsoils generally consist of medium dense silty sand to a depth of approximately 10 feet, underlain by dense sand with gravel to the maximum explored depth of approximately 15 feet below ground surface. Groundwater was not encountered during field investigation in 1956. Further field investigation might be required to obtain standardized blow counts, in-situ samples, and sufficient depth for foundation design.

Driven PC/PS concrete pile or steel piles may be used for structures at this site based on existing borings and local geology. The existing boring is too shallow (15 feet) to develop a meaningful preliminary recommendation for foundation support at this site. Further geotechnical exploration is required for the preliminary foundation type selection and detailed recommendations.

PM 014.22 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-2, B-4, & B-6) for Avenue 17 OC (Bridge No. 41-0068) (Caltrans, 1971), existing grade elevation: 260 feet ± to 262 feet ±.

The subsoils generally consist of hard clayey silt to silty clay layer (SPT blow counts range from 35 to 71) to a depth of approximately 10 feet, underlain by hard sandy silt layer to dense to very dense silty sand layer (SPT blow count of 37 to 68) with few medium dense silty sand pockets to the maximum explored depth of approximately 50 feet below ground surface. Groundwater was not encountered during field investigation in December 1968.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 55 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 016.10 (SR 99)

Reference: As-Built LOTB (Boring No. B-1) for Dry Creek Bridge (Bridge No. 41-0005) (Caltrans, 1975), existing grade elevation: 248 feet ±.

The subsoils generally consist of soft to medium stiff sandy clay to clayey silt layer (SPT blow counts range from 6 to 9) to a depth of approximately 20 feet, underlain by hard sandy silt layer (SPT blow count of 56 to 100+) to the maximum explored depth of approximately 40 feet below ground surface. Groundwater was encountered at elevation 242 feet ± (6 feet ± below ground surface) in March 69. Further field investigation might be required to analyze liquefaction potential due to high groundwater table.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. The existing boring is too shallow to develop a meaningful preliminary recommendation for foundation support at this site. Further geotechnical exploration is required for detailed recommendations.

PM 016.33 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1, B-3 & B-4) for Avenue 18 ½ OC (Bridge No. 41-0069) (Caltrans, 1975), existing grade elevation: 248 feet ± to 251 feet ±.

The subsoils generally consist of medium dense to dense sand to silty sand layers and very stiff to hard sandy silt (SPT blow counts range from 24 to 37) up to a maximum explored depth of 70 feet below ground surface. Groundwater was encountered at elevation 198 feet ± (53 feet ± below ground surface) in March 1969.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 53 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 017.85 (SR 99)
Reference: As-Built LOTB (Boring No. 97-1) for Beranda Creek (Bridge No. 41-0004) (Caltrans, 1998), existing grade elevation: 244 feet ±.

The subsoils generally consist of stiff to very stiff silt with some medium dense to dense sand layers and few gravel pockets (SPT blow counts range from 18 to 35) up to a depth of approximately 45 feet, underlain by dense to very dense sand layer (SPT blow count of 46 to 70) up to a maximum explored depth of 80 feet below ground surface. Groundwater was encountered at elevation 200 feet ± (50 feet ± below ground surface) in May 1997.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 50 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 022.73 (SR 99)
Reference: As-Built LOTB (Boring Nos. B-2 & B-3) for N99-W152 Connector Sep (Bridge No. 41-0043) (Caltrans, 1957), existing grade elevation: 246 feet ±.

The subsoils generally consist of medium dense to dense sand to silty sand layers with few pockets of stiff to hard silt (SPT blow counts ranging from 19 to 35) to the maximum explored depth of approximately 100 feet below ground surface. Groundwater was not encountered during field investigation in October 1957.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 55 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 023.09 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1, B-5 & B-7) for California OH (Bridge No. 41-0014) (Caltrans, 1993), existing grade elevation: 248 feet ±.

The subsoils generally consist of medium dense sandy silt in upper 10 feet depth, underlain by very dense silty sand with few gravel up to a depth of 30 feet (SPT blow counts ranging from 125 to 167) followed by dense to very dense sand/silty sand and hard silt (SPT blow counts ranging from 33 to 100) to the maximum explored depth of approximately 50 feet below ground surface. Groundwater was not encountered during field investigation in February 1991.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 55 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 023.77 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1, B-5 & B-6) for Avenue 24 OC (Bridge No. 41-0054) (Caltrans, 1957), existing grade elevation: 250 feet ± to 251 feet ±.

The subsoils generally consist of medium dense to dense sand layers (generally SPT blow count ranged from 23 to 40) with few silty clay and silty sand pockets to the maximum explored depth of approximately 65 feet below ground surface. Groundwater was encountered at elevation 209 feet ±

(41 feet ± below ground surface) in July, 1954.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 60 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 024.78 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1, B-2, B-3 & B-4) for Brenda Slough (Bridge No. 41-0044) (Caltrans, 1995), existing grade elevation: 235 feet ± to 240 feet ±.

The subsoils generally consist of medium dense to dense sand and very stiff to hard silt (generally SPT blow count ranged from 16 to 33) to the maximum explored depth of approximately 50 feet below ground surface. Groundwater was encountered at elevations ranging from 231 feet ± to 232 feet ± (7 feet ± to 8 feet ± below ground surface) in August 1990. Further field investigation might be required to analyze liquefaction potential due to high groundwater.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. The existing boring is too shallow to develop a meaningful preliminary recommendation for foundation support at this site. Further geotechnical exploration is required for detailed recommendations.

PM 026.58 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-2, B-5, B-6 & B-7) for N99 & 233 Connector (Bridge No. 41-0055) (Caltrans, 1957), existing grade elevation: 244 feet ±.

The subsoils generally consist of medium dense to dense sand (SPT blow counts range from 16 to 37) with few gravel lenses and occasional soft sandy silt pocket up to a maximum explored depth of 35 feet below ground surface. Groundwater was encountered at elevation 219 feet ± (25 feet ± below ground surface) in July 1954.

Based on the Boring MW-24 from the Geotracker database (SL0603935695) at PM 26.40, subsoils from the depth of 10 feet to the depth 70 feet are mainly very dense sand/silty sand with SPT blow

count of 70 to 100+. Groundwater was encountered in MW-24 at the depth of 51 feet below the existing ground surface on December 23, 2008.

For preliminary consideration, driven PC/PS concrete pile is recommended because it is both feasible and cost effective. More detailed geotechnical exploration is needed to further evaluate the site subsurface conditions at the design stage due to the potential of thick very dense sand layer caused difficult driving conditions. Steel pile may be needed based on the findings of additional geotechnical information. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 50 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 026.80 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1& B-4) for Ash Slough (Bridge No. 41-0045L/R) (Caltrans, 1995), existing grade elevation: 239 feet ± to 245 feet ±.

The subsoils consist of medium dense to dense sand to silty and clayey sand layers (SPT blow count of 16 to 52) with few gravel lenses up to a maximum explored depth of 45 feet below ground surface. Groundwater was encountered at elevations ranging from 232 feet ± to 237 feet ± (6 to 13 feet ± below ground surface) in July 1954. Further field investigation might be required to analyze liquefaction potential due to high groundwater.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. The existing boring is too shallow to develop a meaningful preliminary recommendation for foundation support at this site. Further geotechnical exploration is required for detailed recommendations.

PM 028.17 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1& B-3) for Le Grand Avenue Overcrossing (Bridge No. 41-0057) (Caltrans, 1956)**,** existing grade elevation: 233 feet ±.

The subsoils generally consist of loose silty sand layer (SPT blow count of 6) up to approximately 6 feet depth, underlain by medium dense to dense sand to silty sand (generally SPT blow count ranged from 35 to 56) up to a maximum explored depth of 30 feet below ground surface.

Groundwater was not encountered during field investigation in August 1955.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. The existing boring is too shallow to develop a meaningful preliminary recommendation for foundation support at this site. Further geotechnical exploration is required for detailed recommendations.

PM 029.33 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1, B-4) for Chowchilla River Bridge (Bridge No. 41-0001) (Caltrans, 1996), existing grade elevation: 226 feet ± to 232 feet ±.

The subsoils generally consist of medium dense to dense sand/silty sand with few loose sandy silt lenses (SPT blow counts range from 14 to 25) up to a depth of approximately 50 feet, underlain by medium dense to very dense sand to sandy silt (generally SPT blow count of 20 to 48) up to a maximum explored depth of 80 feet below ground surface. Groundwater was encountered at elevation about 225 feet ± (1 foot ± to 5 feet ± below ground surface) in July, 1992. Further field investigation might be required to analyze liquefaction potential due to high groundwater.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 80 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

5.3.3 Bridge Structures - Merced County

PM 1.65 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1, B-2) for South Dutchman Creek Right and Left Bridges (Widen) (Bridge No. 39-01L) (Caltrans, 1993), existing grade elevations: 213± to 221± feet.

The subsoils on the east bank of the creek consist of stiff to very stiff clays with Modified California (MC) sampler (3” OD and 2.5” ID) blow counts ranging from 18 to 34 in the upper 15 to 20 feet, underlain predominantly by dense to very dense sands (MC blow counts ranging from 72

to 50/6") to a depth of approximately 30 feet. Very stiff to hard clays are noted below 30 feet, Very stiff to hard sandy clays are noted below 30 feet to a depth of 35 feet (the maximum depth explored). The subsoils on the west bank consist of loose to medium dense clayey sand (MC blow counts ranging from 17 to 39) to a depth of 10 feet, underlain by 5 feet of hard clay (MC blow count of 60). The subsoils below 15 feet depth are noted as dense to very dense clayey and silty sand (MC blow counts ranging from 77 to 50/3") to a depth of approximately 70 feet, underlain by very stiff to hard clay to a depth of 80 feet (the maximum depth explored). Groundwater was not encountered in January, 1991. Groundwater was encountered in June, 1939 at elev. 198± to 201± (±20' below ground surface).

Considering lateral capacity and/or uplift requirement and possible difficult driving conditions, driven piles are not preferred at this bridge location. CIDH pile is recommended. An allowable bearing capacity of 100 tons is recommended for 2 feet diameter CIDH pile with embedded pile length of 55 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 2.62 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1, B-2) for Dutchman Creek Bridge (Replace) (Bridge No. 39-01L) (Caltrans, 1986), existing grade elevation: 205± feet.

The subsoils on the west bank of the creek consist of medium dense sandy soils (SPT blow counts ranging from 15 to 19) to a depth of approximately 17 feet, underlain by dense to very dense silty sand (SPT blow counts ranging from 42 to 90) to a depth of approximately 32 feet. Layers of medium dense sands and very stiff silts (SPT blow counts ranging from 18 to 26) are noted below 32 feet to a depth of 65 feet (the maximum depth explored), an exception being a 5 feet layer of very hard clayey silt (SPT blow count of 51)at a depth of 40 feet. On the east bank, The subsoils consist of very stiff silt (SPT blow count of 24) to a depth of approximately 10 feet, underlain by dense to very dense sands and hard silts (SPT blow counts ranging from 44 to 58 to a depth of approximately 33 feet. Very stiff silts and sandy silts (SPT blow counts ranging from 23 to 29 are noted below 33 feet depth to a maximum explored depth of 60 feet. Groundwater was encountered at elevation 160 feet ± (45 feet ± below ground surface) in 1984.

Considering lateral capacity and/or uplift requirement and possible difficult driving conditions, driven piles are not preferred at this bridge location. CIDH pile is recommended. An allowable

bearing capacity of 100 tons is recommended for 2 feet diameter CIDH pile with embedded pile length of 55 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 5.22 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1, B-2) for Deadman Creek Bridge (Replace) Bridge No. 39-0002R/L) (Caltrans, 1986), existing grade elevation: 198 feet ±.

The subsoils consist of stiff to very stiff silts and medium dense sands (SPT blow counts ranging from 12 to 35) to a depth of 54 feet, underlain by very stiff to hard clay (SPT blow counts ranging from 23 to 33) to 70 feet, the maximum depth explored. A 3 to 4-foot thick layer of very dense coarse sand and gravel is noted at a depth of approximately 45 feet. Groundwater was encountered at elevation 161 feet ± (36 feet ± below ground surface) in 1984.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 53 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 9.35 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1 and B-2) for Mariposa Creek Bridge (Widen) (Bridge No. 39-81R/L) (Caltrans, 1986), existing grade elevation: 186 feet ± to 189 feet ±.

The subsoils below an 8 feet thick clay fill layer consist of predominantly very stiff to hard silty soils (including clayey silts and sandy silts) and occasional sand layers to 70 feet depth, the maximum depth explored. The SPT blow counts generally range from 11 to 36. Notable exceptions include: a 3 to 4 feet layer of very hard silt (SPT blow count of 63) at approximately 40 feet depth on the west bank; a 3 to 4 feet layer of very dense sand (SPT blow count of 61) at approximately 48 feet depth on the east bank; and 5-foot layer of soft clayey silt (SPT blow count of 4) at a depth of 15 feet on the west bank. Groundwater was encountered at elevation 180 feet ± (6 feet ± below ground surface) in 1984.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An

allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 70 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 9.43 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1. B-3, B-8 and others for groundwater) for Duck Slough Bridge (Widen) (Bridge No. 39-04) (Caltrans, 1986), existing grade elevation: 186 feet ± to 188 feet ± on the banks.

The subsoils consist predominantly of silts, including clayey silts and sandy silts with occasional layers of sand and silty clay. On the eastern side, below a layer of very hard silt (SPT blow counts ranging from 57 to >100) at approximately 15 feet depth, the SPT blow counts range from 15 to 35 to depths ranging from 50 to 60 feet. Dense to very dense silty sands (SPT blow counts ranging from 49 to >100) are noted below 50-60 feet depth. On the western side, The SPT blow counts generally range from 8 to 39 to 70 feet depth, the maximum depth explored. A 4 feet thick very hard silt layer (SPT blow count of 92) is noted at approximately 35 feet depth. Groundwater was encountered at elevation 179 feet ± (9 feet ± below ground surface) in July, 1984.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 65 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 9.86 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1. B-2, B-3; others for groundwater) for Duck Slough Overflow (Widen) (Bridge No. 39-05) (Caltrans, 1986), existing grade elevation: 183 feet ± to 185 feet ± on the banks; 175 feet ± at bottom of slough.

The subsoils on the east bank consist of soft silty clay (SPT blow count of 4 to 6) to a depth of 20 feet, underlain by approximately 5 feet of firm silt (SPT blow count of 8). The firm silt layer is underlain by interbedded layers of very stiff to hard clays and silts and medium dense to very dense sands (SPT blow counts generally ranging between 16 and 35) to 65 feet depth (the

maximum depth explored). A 5 feet layer of very dense gravelly sand (SPT blow count of 60) is noted at 40 feet depth and a 5 feet layer of very hard clayey silt (SPT blow count of 92) is noted at 50 feet depth. On the west bank, The subsoils consist of soils varying from very stiff to hard sandy/clayey silts and loose to medium dense sands (SPT blow counts ranging from 18 to 35, with a 6 feet layer of sand at 5 feet depth with a blow count of 8) to a depth of approximately 30 feet. Very hard silts and dense to very dense sands are noted below 30 feet depth to 65 feet depth, the maximum depth explored. SPT blow counts range from 31 to 59, except a 3 feet layer of very dense sand and silt (SPT blow count of 82) is noted at a depth of approximately 45 feet. Groundwater was encountered at elevation 175 feet ± (8 feet ± to 10 feet ±below ground surface) in October, 1984

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 72 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 10.55 (SR 99)
Reference: As-Built LOTB (Boring Nos. B-1, B-2, B-3 and B-02-1) for Owens Creek Bridge (Bridge No. 39-06R/L) (Caltrans, 1986), existing grade elevation: 181 feet ± to 185 feet ±.

The subsoils consist of very loose to loose sands (SPT blow counts ranging from 2 to 5) to depths ranging from 10 to 15 feet, underlain by soft to very stiff clays and with occasional medium dense sand layers silts (SPT blow counts ranging from 4 to 27) to approximately 45-foot depth. An approximately 5 feet thick layer of very dense sand and gravel (SPT blow counts ranging from 56 to >100) is noted at approximately 45 feet depth, underlain by hard clays and silts to a depth of approximately 70 feet, the maximum depth explored. Groundwater was encountered at elevation 175 feet ± (10 feet ± below ground surface) in July, 1984 and 170 feet ± (10 feet ± below ground surface) in September, 2002.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. Due to the weak soils in the upper 45 feet, the existing boring is too shallow to develop a meaningful recommendation for foundation design at this site. More detailed geotechnical study with deep borings is needed for detailed foundation recommendations.

PM 10.83 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1 and 02-1) for Miles Creek Bridge (Bridge No. 39-07R/L) (Caltrans, 1986, 2003), existing grade elevation: 177 feet ± to 180 feet ± (on the banks).

The subsoils as noted in 1984 consist of stiff to very stiff clay and clayey silt (SPT blow counts ranging from 16 to 25) to a depth of approximately 13 feet underlain by an 8 feet thick layer of very loose to medium dense silty sand with SPT blow counts ranging from 3 to 12. Predominantly medium dense to dense silty sands (SPT blow counts ranging from 28 to 47) are noted below the loose silty sand layer to a depth of approximately 48 feet. Hard clay with SPT blow count of 50 was then encountered to the depth of 50 feet, the maximum depth explored. The boring drilled in 2002 indicates stiff clays (SPT blow counts ranging from 11 to 15) in the upper 15 feet, underlain by predominantly medium dense silty sands and very stiff sandy silts (SPT blow counts ranging from 18 to 21) to a depth of approximately 55 feet. Stiff to very stiff clays (SPT blow counts ranging from 6 to 15) were then encountered to a depth of 72 feet, underlain by medium dense sands (SPT blow counts ranging from 24 to 27) to a depth of approximately 90 feet, followed by dense sands (SPT blow counts ranging from 39 to 45) to a depth of 100 feet, the maximum depth explored. Groundwater was encountered at elevation 171 feet ± (7 feet ± below ground surface) June, 1984; measured 170 feet ± at nearby Owens Creek Bridge.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 75 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 10.98 (SR 99)

Reference: As-Built LOTB (Boring No. B-1, others for Groundwater) for Miles Creek Overflow (Widen) (Bridge No. 39-57) (Caltrans, 1986), existing grade elevation: 178 feet ± to 180 feet ± (on the banks).

The subsoils consist of medium dense to dense silty and clayey sands (SPT blow counts ranging from 23 to 37) to a depth of 24 feet, underlain by dense to very dense sand (SPT blow counts ranging from 45 to 70) to a depth of 33 feet. A 5-foot thick loose silty sand layer (SPT blow count of 8) is noted below 33 feet, underlain by hard clays and silts (SPT blow counts ranging from 32 to

48) to a depth of 60 feet, the maximum depth explored. Groundwater was encountered at elevation 159 feet ± to 161 feet ± (18 feet ± to 20 feet ± below ground surface) December, 1984.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 75 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 11.41 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1 & B-2) for Miles Creek Overflow (Widen) (Bridge No. 39-58) (Caltrans, 1986), existing grade elevation: 179 feet ± to 180 feet ± (on the banks).

The subsoils on the east bank consists of very stiff silts (SPT blow counts ranging from 22 to 26) to a depth of 20 feet, underlain by predominantly hard silts with layers dense sands (SPT blow counts ranging from 35 to 43) to a depth of 50 feet, the maximum depth explored. This includes a 4 feet layer of very dense layer of silty sand with gravel at a depth of 32 feet. On the west bank, fill and medium stiff clay are noted to a depth of 8 feet underlain by very stiff to hard silts and clays (SPT blow counts ranging from 14 to 34) to a depth of approximately 29 feet. Hard silts and dense sands (SPT blow counts ranging from 47 to 56) are noted to a depth of approximately 39 feet, underlain by stiff to hard silts and clays (SPT blow counts ranging from 16 to 35 to a depth of 65 feet, the maximum depth explored. Groundwater was encountered at elevation 170 feet ± (9 feet ± below ground surface) in July, 1984.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 70 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations. Shallow groundwater may also pose liquefaction concerns that need to be further addressed in the foundation design phase.

PM 11.47 (SR 99)

Reference: As-Built LOTB (Boring No. 02-1) for Miles Creek Overflow No. 2 (Bridge No. 39-0229/L) (Caltrans, 2003), existing grade elevation: 177 feet ±.

The subsoils consist of predominantly stiff to very stiff silts and clays and medium dense sands (SPT blow counts ranging from 11 to 29) in the 100 feet boring. Exceptions include a 5 feet thick dense sand layer (SPT blow count of 35) at approximately 45 feet depth; a 10 feet thick lean clay/sandy silt layer (SPT blow count of 38/39) at approximately 75 feet depth and a 5 feet thick dense sand layer (SPT blow count of 35 and 41near the bottom of the boring). Groundwater was not measured but observed between 165 feet ± and 170 feet ± at nearby borings drilled for Bridge No. 39-0228.

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 75 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations. Shallow groundwater may also pose liquefaction concerns that need to be further addressed in the foundation design phase.

PM 13.86 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1, B-2 and B-3) for Route 99/140 Separation (Bridge No. 39-140R/L) (Caltrans, 1960), existing grade elevation: 170 feet ± to 171 feet ±.

The subsoils consist of predominantly stiff to hard silt and sandy silt (SPT blow counts ranging from 17 to 42) to approximately 10 feet depth on the north side and approximately 18 feet depth on the south side. On the north side, compact to dense clayey and silty sands and hard plastic silts (SPT blow counts ranging from 23 to 63) are noted below 10 feet depth, to a depth of approximately 23 feet, underlain by dense medium to coarse sand (SPT blow counts ranging from 31 to 60) to a depth of approximately 38 feet. On the south side, dense coarse to fine sand (SPT blow counts ranging from 35 to 56) are noted from approximately 18 feet to 35 feet depth. On both sides, very hard clays and silts (SPT blow counts ranging from 64 to >100) are noted below the dense sand layers to 46 feet depth, the maximum depth explored. Groundwater was encountered at elevation 164 feet ± (6 feet ± below ground surface) in March/April, 1958.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. The existing borings are too shallow to develop a meaningful preliminary recommendation for foundation support at this site. Further geotechnical exploration is required

for detailed recommendations. Shallow groundwater may also pose liquefaction concerns that need to be further addressed in the foundation design phase.

PM 13.09 (SR 99)

Reference: As-Built LOTB (Boring No. B-1; others for Groundwater) for Childs Avenue Overcrossing (Bridge No. 39-143) (Caltrans, 1962), existing grade elevation: 173 feet ±.

The subsoils consist of very stiff to hard silts and medium dense to dense sands (SPT blow counts ranging from 28 to 41) to a depth of 26 feet underlain by hard silt interbedded with very dense clean sand to a depth of 40 feet (the maximum depth explored). Groundwater was encountered at elevation 168 feet ± (5 feet ± below ground surface) in 1958.

Based on LOTB of boring BH-3 drilled by Parikh Consultants for Campus Parkway Overhead project (PM 12.50) on October 24, 2007, and the Soil Boring Report (Geotracker ID T0604713690, PM 13.20), the soil conditions in the upper 40 feet soils are generally consistent with the findings of the Caltrans As-Built LOTBs. The soils below the depth of 40 feet are generally hard lean clay and very stiff silt to the depth of 100 feet below the existing ground surface. Groundwater was encountered in BH-3 at the depth of about 38 feet on October 24, 2007.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 65 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 13.90 (SR 99)

Reference: As-Built LOTB (Boring No. B-1; others for Groundwater) for Yosemite Way On-Ramp Undercrossing (Bridge No. 39-141) (Caltrans, 1960), existing grade elevation: 169 feet ±.

The subsoils consist of a very dense silty sand layer (SPT blow count of 50) at 5 feet depth underlain by medium dense to dense silty fine sand (SPT blow counts ranging from 24 to 31) to a depth of approximately 30 feet. Dense to very dense sand (SPT blow counts ranging from 44 to 70+) were then encountered to a depth of approximately 38 feet, underlain by very hard silt (SPT

blow count of 50) to a depth of 45 feet, the maximum depth explored. Groundwater was encountered at elevation 164 feet ± (5 feet ± below ground surface) in 1958.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 65 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations.

PM 14.08 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1, B-2, B-9 and B-10 for subsoils; others for Groundwater) for East Merced Overhead (Bridge No. 39-130R/L) (Caltrans, 1960), existing grade elevation: 168 feet ± to 170 feet ±.

The subsoils on the east side consist of a very hard silt layer (SPT blow count of 51) to a depth of approximately 8 feet, underlain predominantly by very stiff silts and medium dense sands (SPT blow counts ranging from 17 to 26) to a depth of 40 feet. Hard sandy silts and sandy clays (SPT blow counts ranging from 30 to 56) were then encountered to a depth 65 feet depth, the maximum depth explored. On the west side, the subsoils consist of medium dense to dense silty sands (SPT blow counts ranging from 25 to 39) underlain by very hard sandy clay and concretionary silt (SPT blow counts of 70 to 100) to a depth of approximately 32 feet. Layers of medium dense sands and stiff to hard silts and clays (SPT blow counts ranging from 15 to 48) are noted below 32 feet to a depth of 75 feet, underlain by very stiff to hard silts and very dense sands (SPT blow counts 100+ below 75 feet depth to 90 feet depth). Groundwater was encountered at elevation 162 feet ± to 164 feet ± (5 feet ± to 7 feet ± below ground surface).

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 65 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations. Shallow groundwater may also pose liquefaction concerns that need to be further addressed in the foundation design phase.

PM 14.22 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1 & B-2 for subsoils; others for Groundwater) for 15th Street Undercrossing (Bridge No. 39-139R/L) (Caltrans, 1960), existing grade elevation: 168 feet ±.

The subsoils on the west side consist of a hard silt layer (SPT blow count >100) in the upper 8 feet underlain by very stiff silt (SPT blow counts ranging from 17 to 22) to a depth of approximately 16 feet, followed by dense sand and very hard silt (SPT blow counts ranging from 44 to 54) to a depth of approximately 33 feet. Very stiff silts and medium dense sands (SPT blow counts ranging from 18 to 28) were then encountered to a depth of 65 feet, the maximum depth explored. On the east side, a 5 feet thick very hard surficial silt layer is underlain by very stiff to hard silts and medium dense to dense sands to 65 feet depth, the maximum depth explored. Groundwater was encountered at elevation 162 feet ± to 164 feet ± (5 feet ± to 7 feet ± below ground surface).

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 65 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations. Shallow groundwater may also pose liquefaction concerns that need to be further addressed in the foundation design phase.

PM 14.42 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1 & B-2 for subsoils; others for Groundwater) for G Street Undercrossing (Bridge No. 39-142R/L) (Caltrans, 1960), existing grade elevation: 167 feet ±.

The subsoils consist of a surficial hard to very hard silt layer (SPT blow count of 60), extending to a depth of approximately 8 feet. On the west side, the surficial silt layer is underlain by medium dense to very dense sand layers and sandy/clayey silt (SPT blow counts ranging from 18 to 66) to approximately 28 feet depth, underlain by a very hard silt layer (SPT blow count >70) to a depth of approximately 36 feet. Very stiff to hard silts and clays (SPT blow counts of 27) are noted below 36 feet depth, to 50 feet depth, the maximum depth explored. On the east side, the surficial silt layer is underlain by very stiff to hard silts and sandy silts (SPT blow counts ranging from 24 to 50)to a depth of approximately 34 feet, underlain by a very hard clayey silt layer (SPT blow count >70) to a depth of approximately 42 feet. Hard clayey silt (SPT blow count of 37) is noted below

42 feet depth, to 50 feet depth (the maximum depth explored). Groundwater was encountered at elevation 158 feet ± to 160 feet ± (7 feet ± to 8 feet ± below ground surface).

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. The existing borings are too shallow to develop a meaningful preliminary recommendation for foundation support at this site. Further geotechnical exploration is required for detailed recommendations. Shallow groundwater may also pose liquefaction concerns that need to be further addressed in the foundation design phase.

PM 14.67 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1 & B-3 for subsoils; others for Groundwater) for Route 99/59 Separation (Bridge No. 39-136R/L) (Caltrans, 1960), existing grade elevation: 165 feet ± to 166 feet ±.

The subsoils consist of a hard to very hard silt layer (SPT blow counts ranging from 34 to 72), extending to a depth of approximately 8 to 10 feet. The silt layer is underlain predominantly by medium dense to dense sand layers (SPT blow counts ranging from 17 to 32) to approximately 32 feet depth, underlain by a hard sandy clay/clayey silt layer (SPT blow counts ranging from 35 to 52) to a depth of approximately 40 feet. Hard to very hard clay is noted from a depth of 40 feet to a depth of 50 feet, the maximum depth explored. Groundwater was encountered at elevation 157 feet ± (9 feet ± to 10 feet ± below ground surface).

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 65 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations. Shallow groundwater may also pose liquefaction concerns that need to be further addressed in the foundation design phase.

PM 14.87 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1 and B-6 for subsoils; others for Groundwater) for L Street UC (Bridge No. 39-133R/L) (Caltrans, 1960), existing grade elevation: 165 feet ±.

The subsoils consist of very hard silt layer (SPT blow count ranging from 52 to > 100) within 10

feet near the surface. On the north side, stiff to very stiff silts and medium dense silty sands (SPT blow counts ranging from 13 to 23) are noted below 10 feet depth to a depth of approximately 25 feet, underlain by very dense sand (SPT blow counts ranging from 52 to >70) to 40 feet depth (the maximum depth explored). On the south side, a stiff to hard silt layer (SPT blow counts ranging from 14 to 35) is noted below 10 feet depth to a depth of approximately 17 feet, underlain by compact to dense silty sand (SPT blow counts ranging from 28 to 42) to a depth of approximately 27 feet. The silty sand layer is underlain by hard silt, dense sand and hard clay (SPT blow counts ranging from 47 to 49) to 40 feet depth, the maximum depth explored. Groundwater was encountered at elevation 153 feet ± to 155 feet ± (10 feet ± to 12 feet ± below ground surface).

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. The existing borings are too shallow to develop a meaningful preliminary recommendation for foundation support at this site. Further geotechnical exploration is required for detailed recommendations. Shallow groundwater may also pose liquefaction concerns that need to be further addressed in the foundation design phase.

PM 14.96 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1 & B-6 for subsoils; others for Groundwater) for M Street UC (Bridge No. 39-134R/L) (Caltrans, 1960), existing grade elevation: 164 feet ±.

The subsoils consist of a very hard silt layer (SPT blow count > 70) within 5 feet near the surface, underlain by hard clayey silts and dense silty fine sands (SPT blow counts ranging from 38 to 56) to a depth of approximately 40 feet. Very dense sands and hard silty clays (SPT blow counts ranging from 37 to 70+) were then encountered to a depth of 50 feet, the maximum depth explored. Groundwater was encountered at elevation 152 feet ± to 154 feet ± (9 feet ± to 11 feet ± below ground surface).

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 65 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations. Shallow groundwater may also pose liquefaction concerns that need to be further addressed in the foundation design phase.

PM 15.15 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1&B-6 for subsoils; others for Groundwater) for O Street UC (Bridge No. 39-135R/L) (Caltrans, 1960), existing grade elevation: 163 feet ±.

The subsoils consist of a surficial layer of stiff silt to depths of 6 feet at the northern end and 3 feet at the southern end, underlain by interbedded layers of compact to hard/dense silts (including clayey silts and sandy silts) and sands to depths of 40 feet to 43 feet. The SPT blow counts in the silt layer range from 26 to 44, except at both ends a very hard clayey silt layer (SPT blow counts of 64 and 70) is noted. The very hard clayey silt layer occurs at 20 feet depth at the southern end and is 10 feet thick; at the northern end it occurs at 30 feet depth and only about 3 feet thick. The interbedded layer is underlain by very stiff to hard silty clay (SPT blow count of 50) to 45 feet depth, the maximum depth explored. Groundwater was encountered at elevation 152 feet ± to 154 feet ± (9 feet ± to 11 feet ± below ground surface).

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. The existing borings are too shallow to develop a meaningful preliminary recommendation for foundation support at this site. Further geotechnical exploration is required for detailed recommendations. Shallow groundwater may also pose liquefaction concerns that need to be further addressed in the foundation design phase.

PM 15.42 (SR 99)

Reference: As-Built LOTB (Boring No. B-4 for subsoils; others for Groundwater) for R Street UC (Bridge No. 39-137R/L) (Caltrans, 1960), existing grade elevation: 161 feet ± to 162 feet ±.

The subsoils on the south side consist of hard silt/sandy silt (SPT blow counts ranging from 33 to 37) to a depth of approximately 15 feet, grading to very stiff to hard clayey silt (SPT blow counts ranging from 26 to 32) to 40 feet depth. A 12 feet layer of softer clayey silt (SPT blow count of 10) is noted between 40 feet and 52 feet depths, underlain by a compact sand and gravel (SPT blow count of 17) to 68 feet depth. Very stiff clay and dense sand are noted to 75 feet depth, the maximum depth explored. On the north side, stiff clay and hard silt/sandy silt (SPT blow counts ranging from 36 to 39)are noted to a depth of approximately 15 feet, underlain by a 5 feet thick compact sand layer (SPT blow count of 14). The compact sand layer is underlain by dense silty sand and sandy silt (SPT blow counts ranging from 31 to 51) to a depth of approximately 57 feet. Very stiff clayey silt is noted below 57 feet depth to 60 feet depth, the maximum depth explored.

Groundwater was encountered at elevation 152 feet ± to 154 feet ± (8 feet ± to 10 feet ± below ground surface).

Driven PC/PS concrete pile is recommended because it is both feasible and cost effective. An allowable bearing capacity of 100 tons is recommended for 14-inch square PC/PS pile with embedded pile length of 60 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations. Shallow groundwater may also pose liquefaction concerns that need to be further addressed in the foundation design phase.

PM 15.78 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1& B-2 for subsoils; others for Groundwater) for Route 90/140 Separation (Br. No. 39-138R/L) (Caltrans, 1960), existing grade elevation: 161 feet ±.

The subsoils consist of very hard silt (SPT blow counts ranging from 38 to 70+) in the upper 12 feet, underlain by layers of compact to very dense sandy silt to silty sand (SPT blow counts ranging from 23 to 70+. Very stiff to hard clay (SPT blow counts ranging from 28 to 50) was then encountered to a depth of 50 feet, the maximum depth explored. Groundwater was encountered at elevation 152 feet ± to 157± (4 feet ± to 9 feet ±below ground surface).

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. The existing borings are too shallow to develop a meaningful preliminary recommendation for foundation support at this site. Further geotechnical exploration is required for detailed recommendations. Shallow groundwater may also pose liquefaction concerns that need to be further addressed in the foundation design phase.

PM 16.38 (SR 99)

Reference: As-Built LOTB (Boring No. B-4 for subsoils; others for Groundwater) for Bear Creek (Bridge No. 39-132R/L) (Caltrans, 1960), existing grade elevation: 160 feet ± to 165 feet ±.

The subsoils consist of soft to stiff clayey silt in the upper 10 feet, underlain by approximately 4 feet thick of very stiff clay followed by loose to slightly compact clayey sand (SPT blow counts ranging from <1 to 11) to a depth of approximately 22 feet. A medium dense silty sand layer (SPT

blow count of 23) was then encountered to a depth of 30 feet underlain by hard clayey/sandy silts and hard clay (SPT blow counts ranging from 59 to 67) to a depth of approximately 55 feet followed by a very dense sand layer to a depth of 60 feet, the maximum depth explored. Groundwater was encountered at elevation 152 feet ± (10 feet ± below ground surface).

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. Due to the weak soils in the upper 22 feet, the existing borings are too shallow to develop a meaningful preliminary recommendation for foundation support at this site. Further geotechnical exploration is required for detailed recommendations. Shallow groundwater may also pose liquefaction concerns that need to be further addressed in the foundation design phase.

PM 16.54 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-4, B-6, B-8) for West Merced Overhead (Bridge No. 39-131L/R) (Caltrans, 1960), existing grade elevation: 159 feet ± to 161 feet ±.

The subsoils consist of predominantly of loose to compact silts and sands (SPT blow counts ranging from 7 to 27) to approximately 20 feet depth, underlain by approximately 5 feet of very dense sand (SPT blow counts ranging from 50 to >70). Hard silts and silty clays (SPT blow counts ranging from 33 to >70 underlie the very dense sands to depths of approximately 45 feet, the maximum depths explored in two of three borings. A stiff silty clay layer (SPT blow count of 12), was encountered in the northernmost boring below 45 feet depth to the bottom of the boring at approximately 50 feet depth. Groundwater was encountered at elevation 153 feet ± to 156 feet ± (6 feet ± to 9 feet ± below ground surface) in February, 1959.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. The existing borings are too shallow to develop a meaningful preliminary recommendation for foundation support at this site. Further geotechnical exploration is required for detailed recommendations. Shallow groundwater may also pose liquefaction concerns that need to be further addressed in the foundation design phase.

PM 17.30 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1, B-3) for Black Rascal Canal (Br. Nos. 39-10R/L, 39C-37) (Caltrans, 1960), existing grade elevation: 157 feet ± to 162 feet ±.

The subsoils at the west side of the bridge consist of very loose to slightly compact silts and sands (SPT blow counts ranging from 4 to 19) in the upper 26 feet, underlain by medium dense sand (SPT blow count of 26) to a depth of 33 feet. Very stiff to hard silts and dense to very dense sands and silty sands (SPT blow counts ranging from 38 to 52) were then encountered to a depth of approximately 55 feet, the maximum depth explored. At the east side of the bridge, the subsoils consist of stiff to hard silts and sandy silts (SPT blow counts of 44) in the upper 10 feet, underlain by loose to slightly compact sand and silty sand (SPT blow counts ranging from 9 to 17) to approximately 24 feet depth. Hard to very hard silts (SPT blow counts ranging from 29 to 60) were then encountered to a depth of 42 feet, underlain by medium dense sand (SPT blow count of 21) to the maximum depth explored (60 feet). Groundwater was encountered at elevation 146 feet ± (11 feet ± below ground surface) in March, 1959.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. An allowable bearing capacity of 100 tons is recommended for 16-inch diameter open-ended steel pipe pile with embedded pile length of 65 feet for preliminary estimation. Deep borings at the proposed bridge site based on the final design are recommended to derive design recommendations for bridge foundations. Shallow groundwater may also pose liquefaction concerns that need to be further addressed in the foundation design phase.

PM 18.51 (SR 99)

Reference: As-Built LOTB (Boring Nos. B-1, B-6) for Franklin Road Overcrossing (Bridge No. 39-84) (Caltrans, 1962), existing grade elevation: 151 to 153 feet ±.

The subsoils consist of loose to medium dense silty sand (SPT blow counts ranged from 15 to 24) in the upper 5 feet, underlain by dense to very dense sand and silty sand and hard to very hard silt and sandy silt (SPT blow counts ranged from 41 to 70+) to a depth of 45 feet, the maximum depth explored. Groundwater was encountered at elevation 143 feet ± to 145 feet ± (5 feet ± to 9 feet ± below ground surface) in January, 1959.

Steel piles appear to be the most suitable foundation type at this site due to the possible difficult driving conditions. The existing borings are too shallow to develop a meaningful preliminary recommendation for foundation support at this site. Further geotechnical exploration is required for detailed recommendations. Shallow groundwater may also pose liquefaction concerns that need to be further addressed in the foundation design phase.

5.3.4 Seismic Design Considerations

Based on the California High-Speed Train Project Technical Memorandum: 15% Seismic Design Benchmarks (TM 2.10.5) dated March 15, 2010: in the absence of any project specific seismic design spectra, designers are directed to United States Geological Survey (USGS) Earthquake Hazards Program. USGS has developed 2002 United States National Seismic Hazard Maps of contours of seismic design parameters for the Maximum Considered Earthquake (MCE) event. These mapped parameters are accessible through USGS earthquake ground motion Java calculator, which may be used during 15% seismic design.

For details regarding the seismic ground motion parameters, refer to ASCE7-05 [9, Section 11.4], which defines the parameters S_{MS} and S_{M1}: the 0.2-second and 1.0-second site adjusted spectral response acceleration for the MCE-type event, respectively. The default spectral damping is 5%. Within the Java calculator, 15% Design MCE spectra are to be developed as follows:

1. Choose ASCE 7 Standard.
2. Input project specific latitude and longitude.
3. If no soil data is available, assume Site Class D.
4. Establish site modified Sa vs. T spectral ordinates for MCE.
5. Multiply the Site Modified Sa vs. T spectral ordinates for MCE by an Importance Factor, I = 1.25 (i.e., Occupancy Category III per ASCE 7-05).

We have developed four (4) representative Design MCE spectra for preliminary seismic design considerations. Based on the geotechnical information collected and our experience with the geological formation in the project area, the site can be generally classified as Site Class D. The seismic design parameters obtained based on the procedures described above are summarized in following table. The Design MCE spectra, as presented in Plate 5, were developed based on the S_{DS} and S_{D1} values and a Importance Factor of 1.25.

Summary of Seismic Design Parameters

Site	Site Location (Lat. –Long.)	Site Classification	S_s	S_1	F_a	F_v	S_{DS}	S_{D1}	I
Fresno	36.71768º -119.78458º	D	0.531g	0.229g	1.375	1.943	0.487g	0.296g	1.25
Madera	36.96151º -120.06479º	D	0.549g	0.228g	1.361	1.943	0.498g	0.296g	1.25
Chowchilla	37.12691º -120.25230º	D	0.545g	0.229g	1.364	1.942	0.495g	0.296g	1.25
Merced	37.29573º -120.47280º	D	0.553g	0.235g	1.358	1.931	0.500g	0.302g	1.25

6.0 ADDITIONAL GEOTECHNICAL EXPLORATIONS AND STUDIES

This preliminary geotechnical study was conducted for the Merced – Fresno Section of California High-Speed Train Project; this report is intended to help define the overall design program and evaluate cost impacts. This study was planned so as to provide an overview of the subsurface conditions along the project alignment and not necessarily for use in structure specific foundation designs. Additional subsurface explorations should be conducted as part of the 30% design. At a minimum the intent of the detail program should be to:

1. Collect data where no readily available LOTB exist;
2. Refine soil data at critical structures;
3. Update/confirm data to more effectively develop design parameters;
4. In-fill locations to develop a better understanding of the subsurface conditions;
5. Address specific locations where "problem" soil and groundwater conditions may exist.

7.0 LIMITATIONS

Our services consist of professional opinions and recommendations made in accordance with generally accepted geotechnical engineering principles and practices for the defined scope and are based on our data research and the assumption that the subsurface conditions do not deviate from reported conditions. All work done is in accordance with generally accepted geotechnical engineering principles and practices. No warranty, expressed or implied, of merchantability or fitness, is made or intended in connection with our work or by the furnishing of oral or written reports or findings.

The scope of our services did not include any environmental assessment or investigation for the presence or absence of hazardous or toxic materials in structures, soil, surface water, groundwater or air, below or around this site. Unanticipated soil conditions are commonly encountered and cannot be fully determined by taking soil samples and excavating test borings; different soil conditions may require that additional expenditures be made during construction to attain a properly constructed project. Some contingency fund is thus recommended to accommodate these possible extra costs.

This report has been prepared for the proposed project as described earlier, to assist the engineer in the preliminary (15%) design of this project. In the event any changes in the design or location of the facilities are planned, or if any variations or undesirable conditions are encountered during

subsequent studies or during construction, our conclusions and recommendations shall not be considered valid unless the changes or variations are reviewed and our recommendations modified or approved by us in writing.

This report is issued with the understanding that it is the designer's responsibility to ensure that the information and recommendations contained herein are incorporated into the project and that necessary steps are also taken to see that the recommendations are carried out in the field. Additional studies are required to refine and/or update the design to a 30% level.

The findings in this report are valid as of the present date. However, changes in the subsurface conditions can occur with the passage of time, whether they are due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards occur, whether they result from legislation or from the broadening of knowledge. Accordingly, the findings in this report might be invalidated, wholly or partially, by changes outside of our control.

Respectfully submitted,
PARIKH CONSULTANTS, INC.

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Project Engineer

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Project Engineering Geologist

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Y. David Wang, Ph.D., P.E. C52911
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Gary Parikh, P.E., G.E., 666
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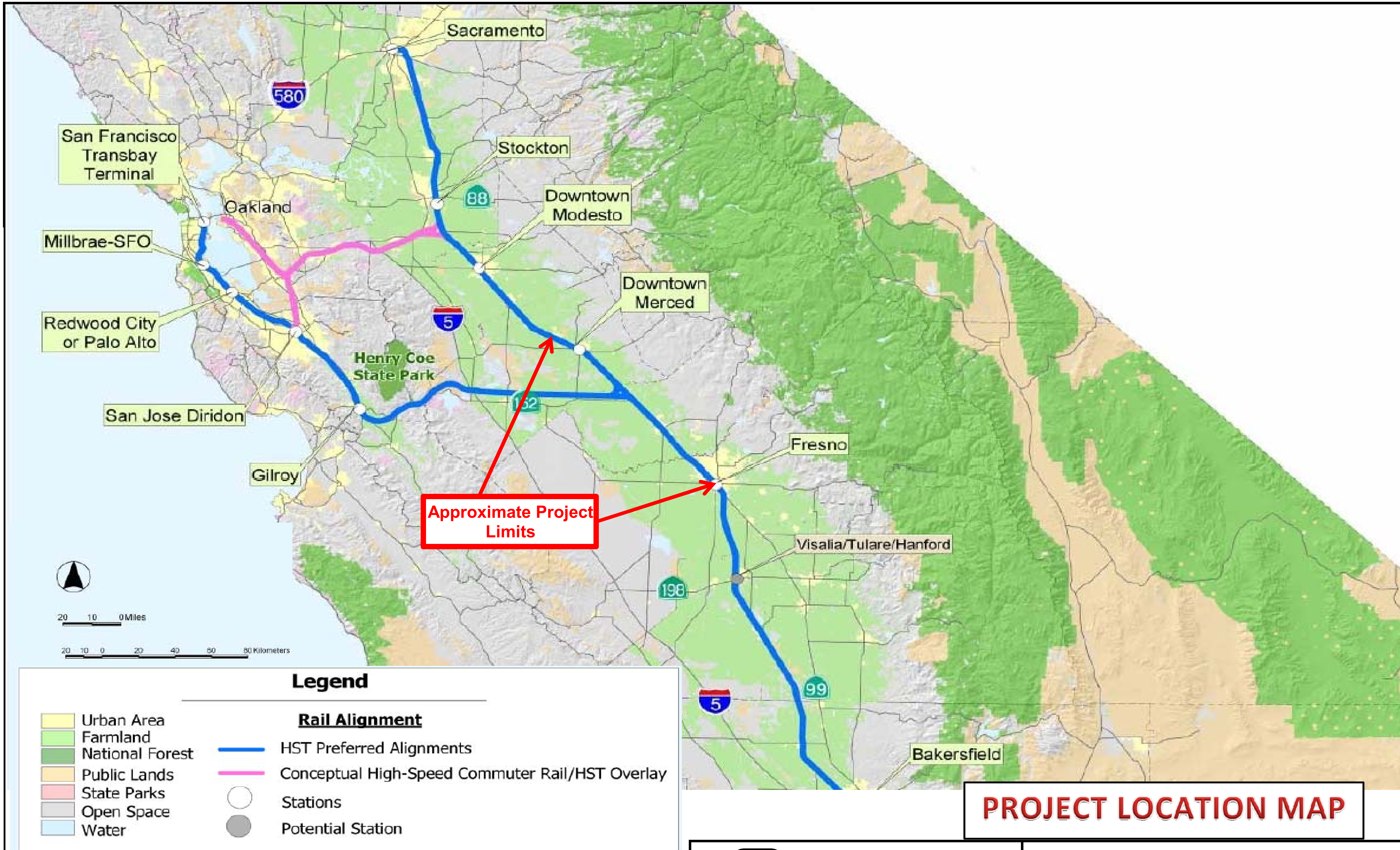
STATE OF CALIFORNIA



Source : California High-Speed Train, Project Environmental impact report/ Environmental Impact Statement (Draft) Scoping Report , January 2010.

PROJECT LOCATION MAP

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

CALIFORNIA HIGH SPEED PROJECT
MERCED- FRESNO SECTION

JOB NO.: 209138.10	PLATE NO.: 1

DESCRIPTION OF MAP UNITS

POST-MODESTO DEPOSITS

Unit	Description
pmal	Undifferentiated alluvium
pmls	Marsh and lacustrine deposits

MODESTO FORMATION

Upper member—Divided into:

Unit	Description
m2e	Eolian sand
m2	Arkosic alluvium along major westward-flowing rivers—Derived from interior of Sierra Nevada. Upper fans and terraces
m2b	Fine-grained stratified alluvium of flood basins, lower fans, and interdistributary areas

Lower member—Divided into:

Unit	Description
m1e	Eolian sand
m1	Arkosic alluvium along major westward-flowing rivers—Derived from interior of Sierra Nevada. Upper fans and terraces
m1b	Fine-grained, better stratified alluvium of flood basins, lower fans, and interdistributary areas

RIVERBANK FORMATION

Upper unit—Includes:

Unit	Description
r3	Arkosic sandy channel alluvium
rg	Colluvial lag gravel
r2	Middle unit—Arkosic sandy channel alluvium and minor eolian sand
r1	Lower unit—Arkosic sandy alluvium

TURLOCK LAKE FORMATION

Upper unit—Divisible into:

Unit	Description
t2	Undifferentiated arkosic alluvium
t2f	Friant Pumice Member

SOILS UNITS (NRCS)

DhA - Delhi loamy sand (0 - 3% slopes)
Es - Exeter sandy loam
Et - Exeter sandy loam, shallow
Ex - Exeter loam
Hc - Hanford sandy loam
HdA - Hanford fine sandy loam, mod. deep
Hd - Hanford sandy loam, benches
Hl - Hanford gravelly sandy loam
Hst - Hesperia fine sandy loam, mod. deep
Pk - pits
SaA - San Joaquin sandy loam (0 -3% slopes)
ScA - San Joaquin sandy loam
SdA - San Joaquin sandy loam, shallow
SgA - San Joaquin loam, shallow (0-3% slopes)

Legend

- map sheet & number
- limits of project corrior (1 mile wide)
- Post Mile# PM **.**
- Bridge# BR**-***
- Caltrans bridges
- GeoTracker# T*********
- Tank Leak Sites
- have boring logs
- may have boring logs
- no boring logs found

See PLATES 2-1 thru 2-27 for map sheets

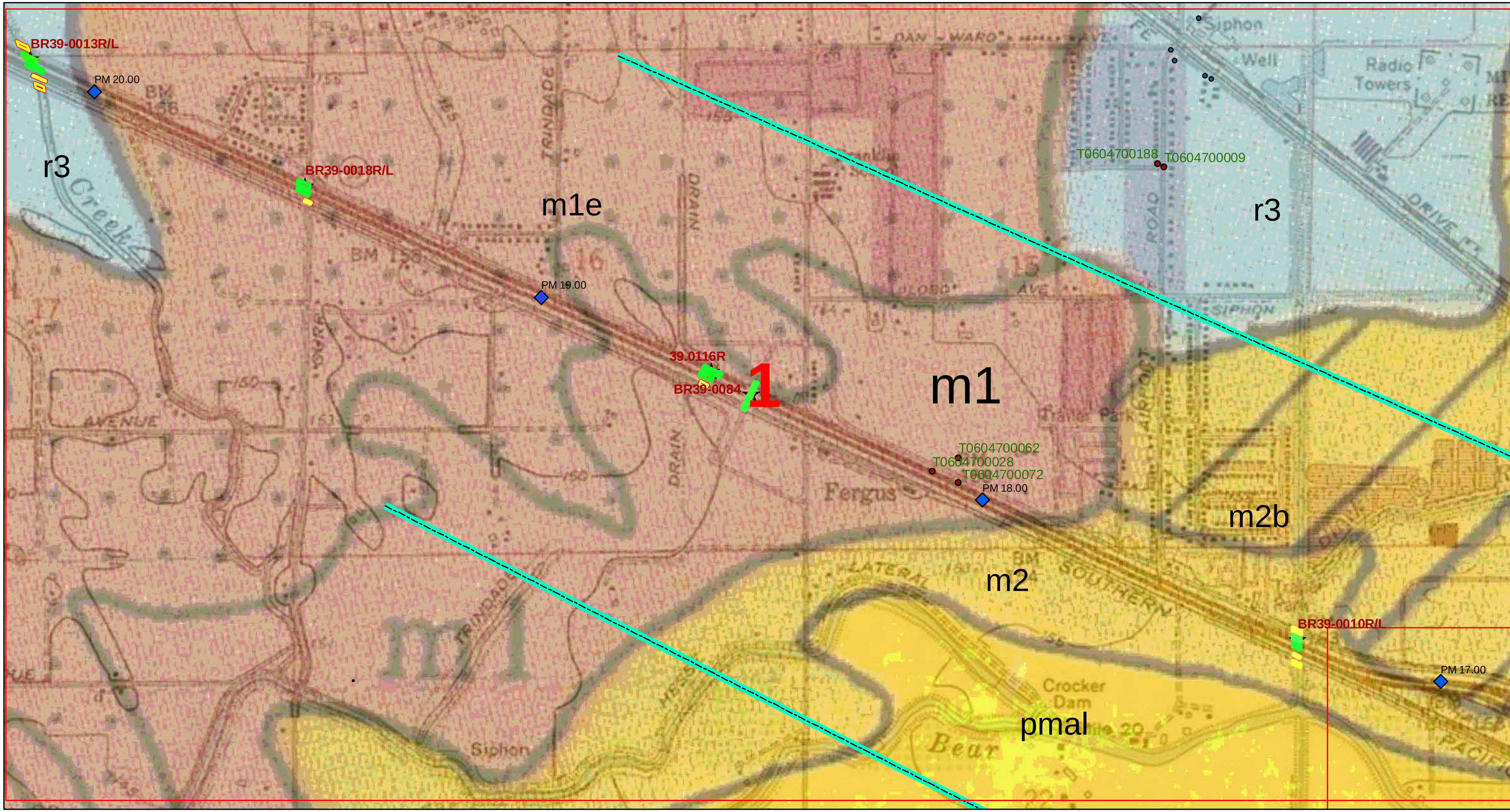
Geologic and Soils Maps Explanation

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
geology from Marchand and Allwardt; 1981; USGS
soils units from NRCS
bridges from Caltrans
tank leak sites from GeoTracker website

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10 PLATE NO.: 2-0



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Feet

See PLATE 2-0 for Legend

Geologic Map and Site Plan

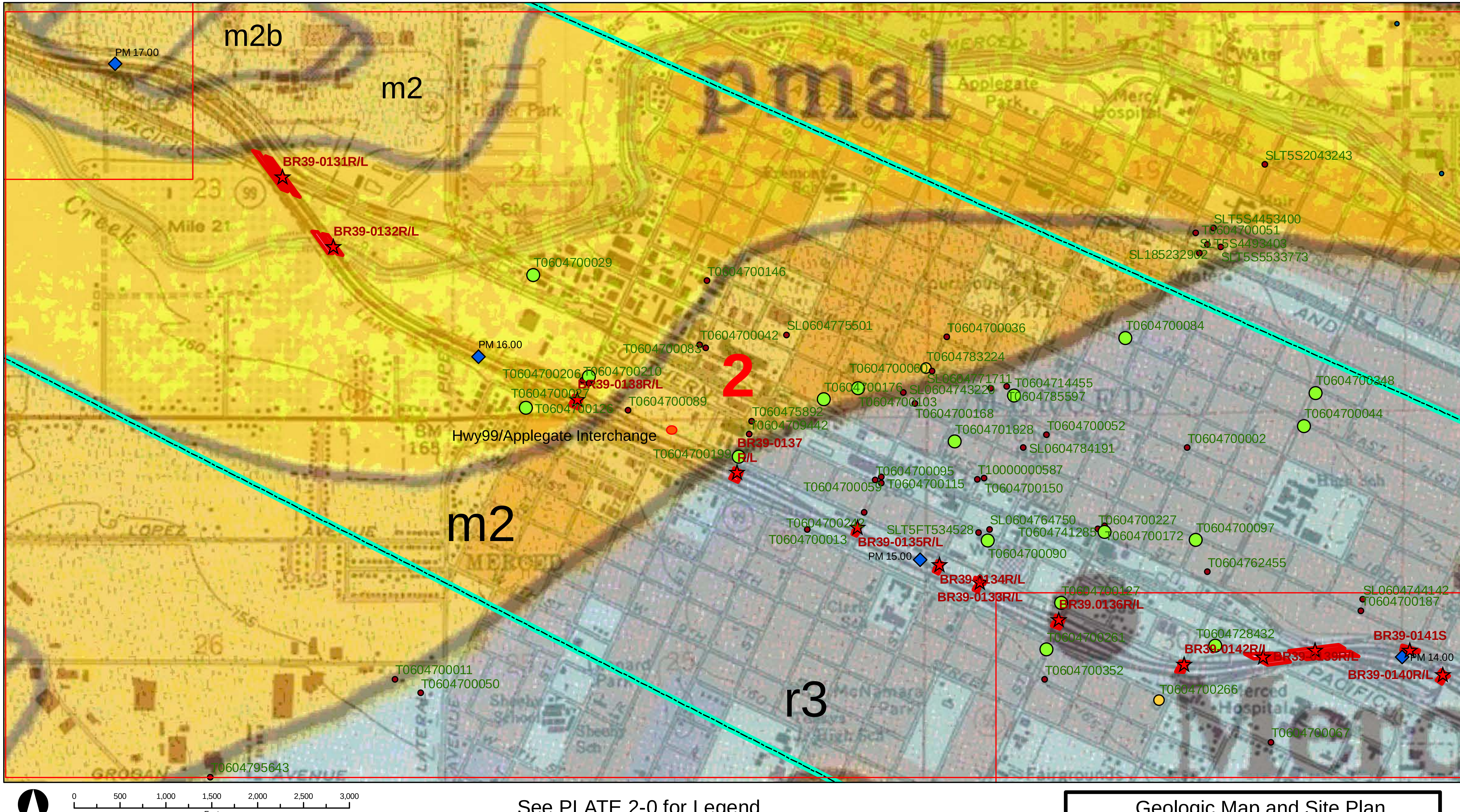
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-1



See PLATE 2-0 for Legend

Geologic Map and Site Plan

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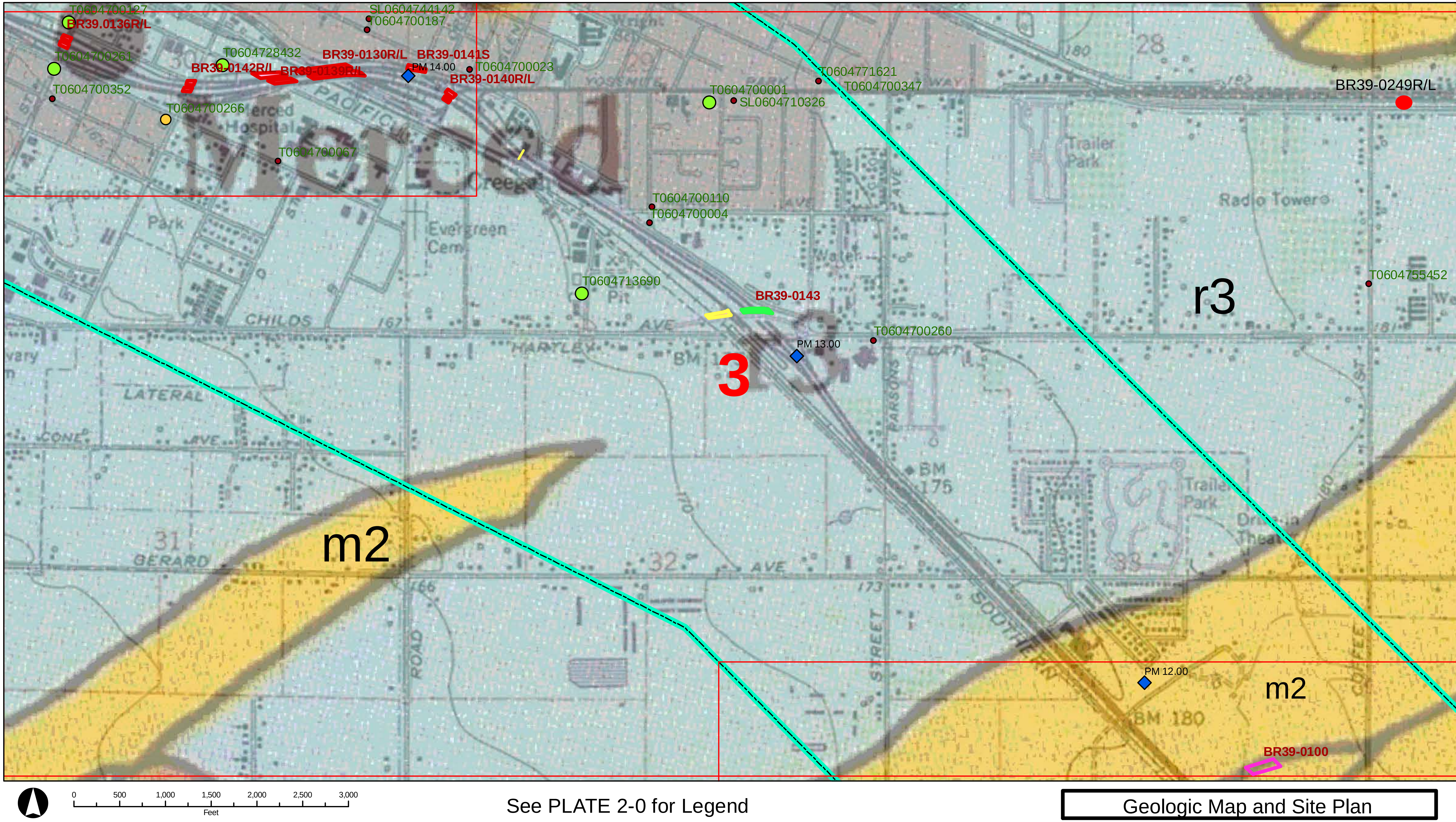
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-2



See PLATE 2-0 for Legend

Geologic Map and Site Plan

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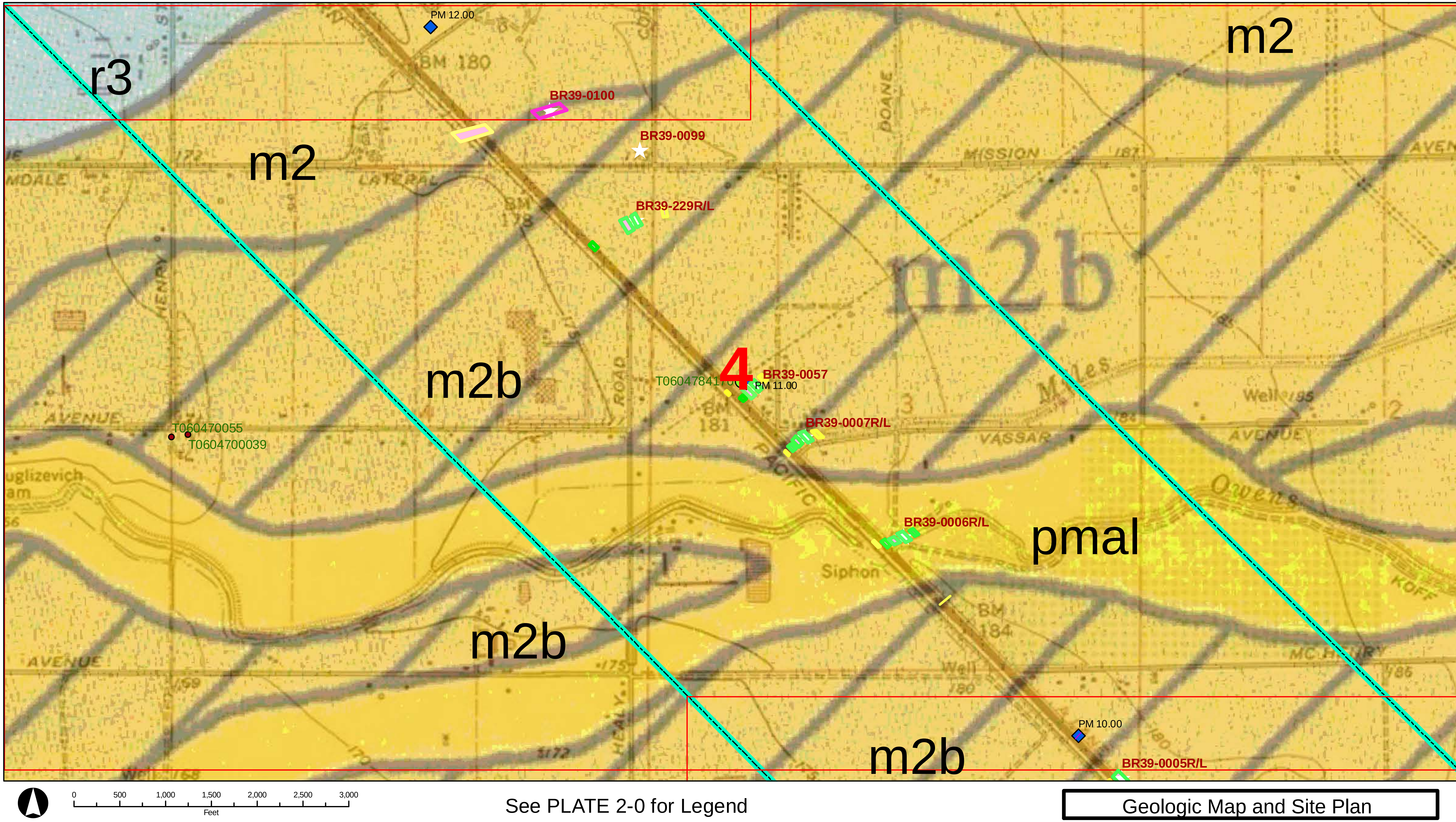
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-3



See PLATE 2-0 for Legend

Geologic Map and Site Plan

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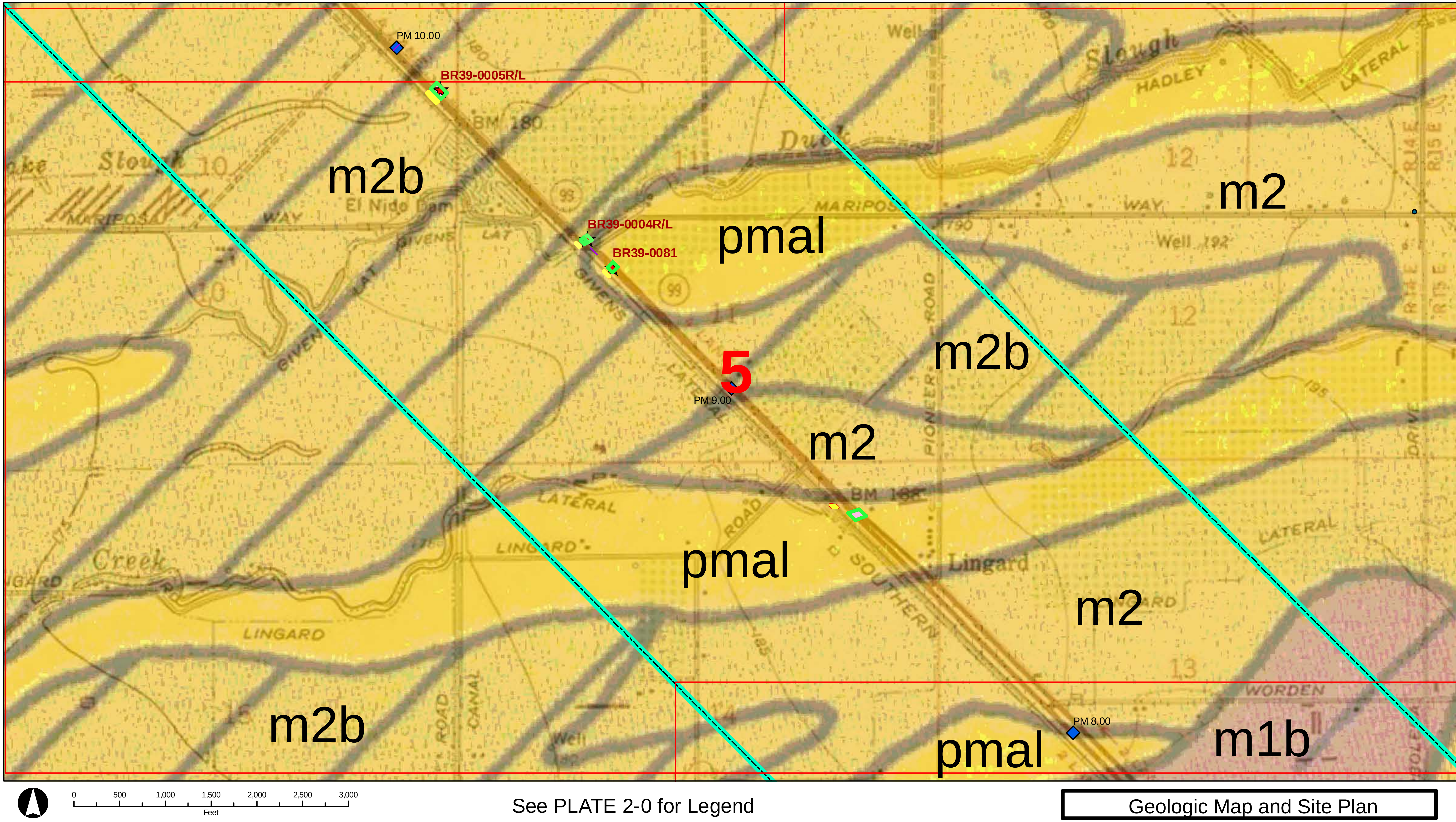
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-4



See PLATE 2-0 for Legend

Geologic Map and Site Plan

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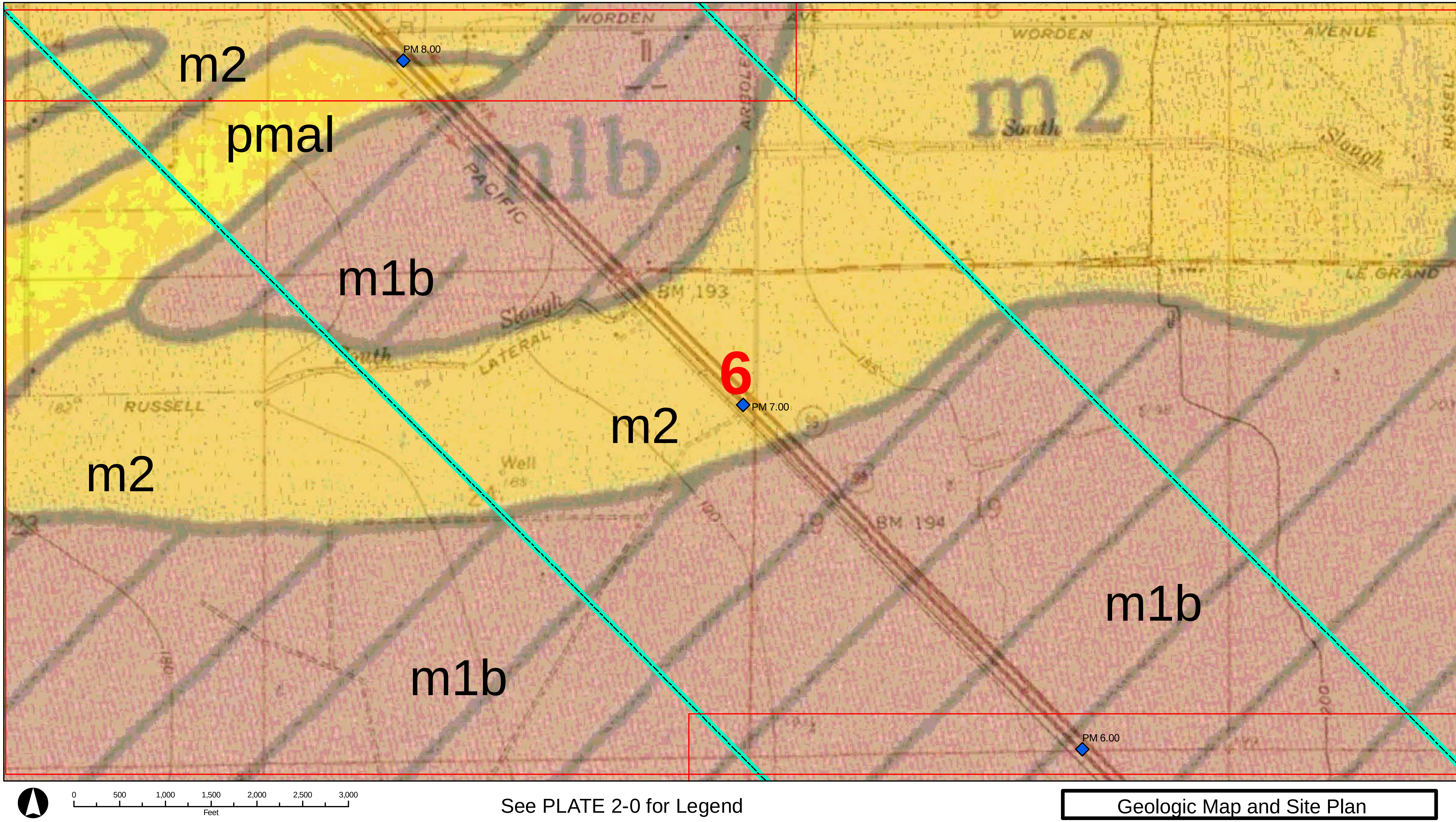
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-5



See PLATE 2-0 for Legend

Geologic Map and Site Plan

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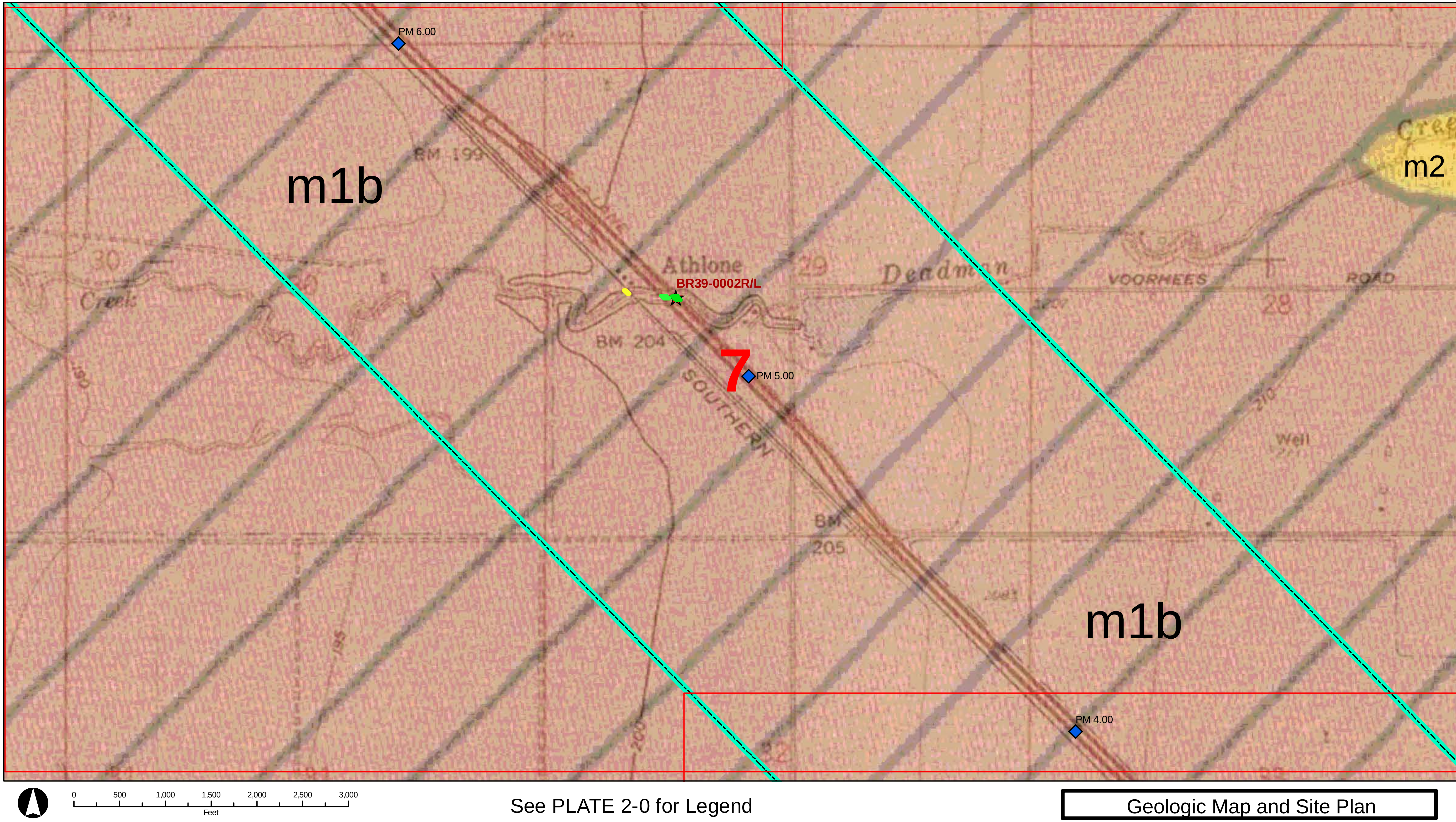
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-6



See PLATE 2-0 for Legend

Geologic Map and Site Plan

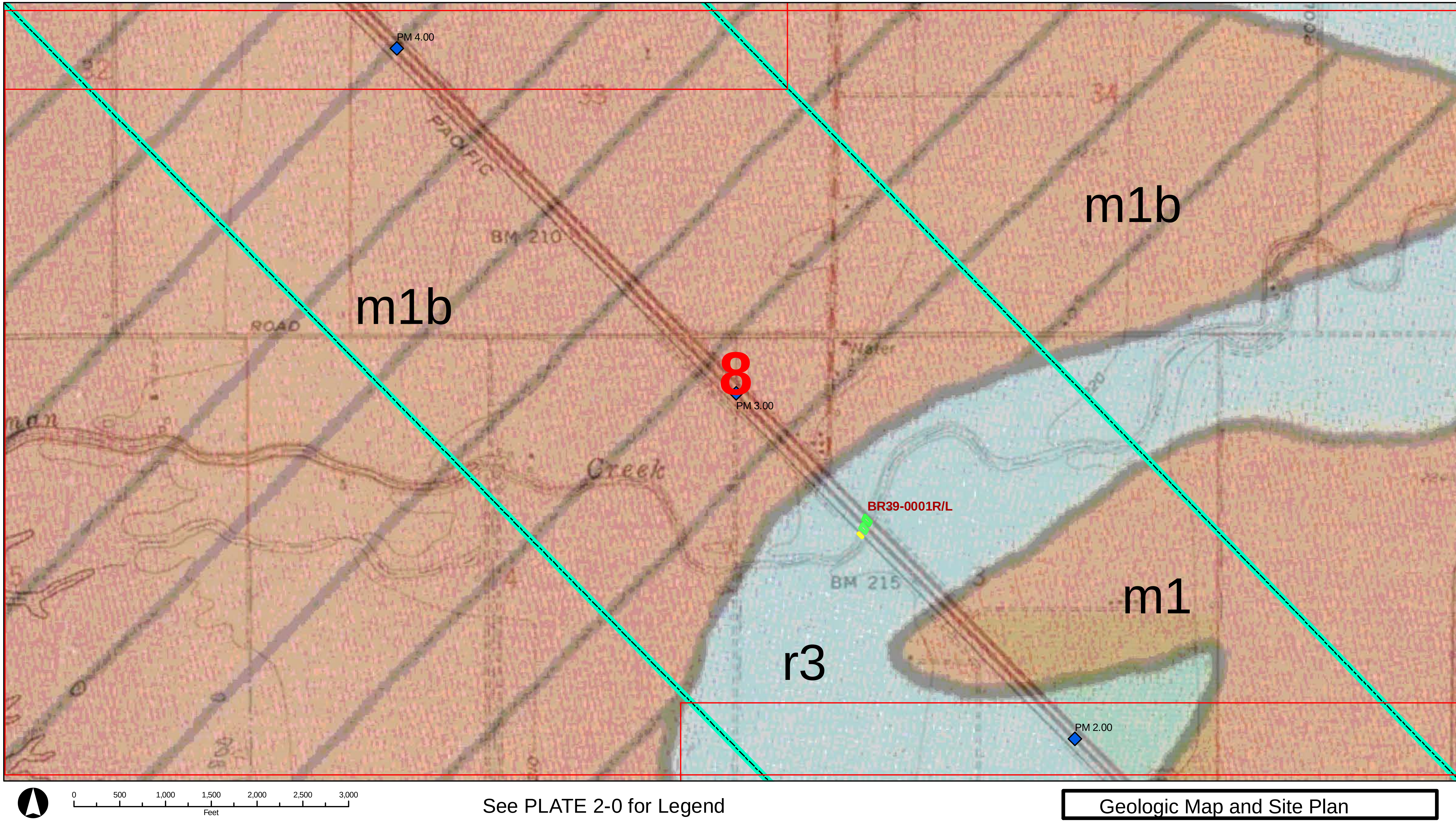
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-7



See PLATE 2-0 for Legend

Geologic Map and Site Plan

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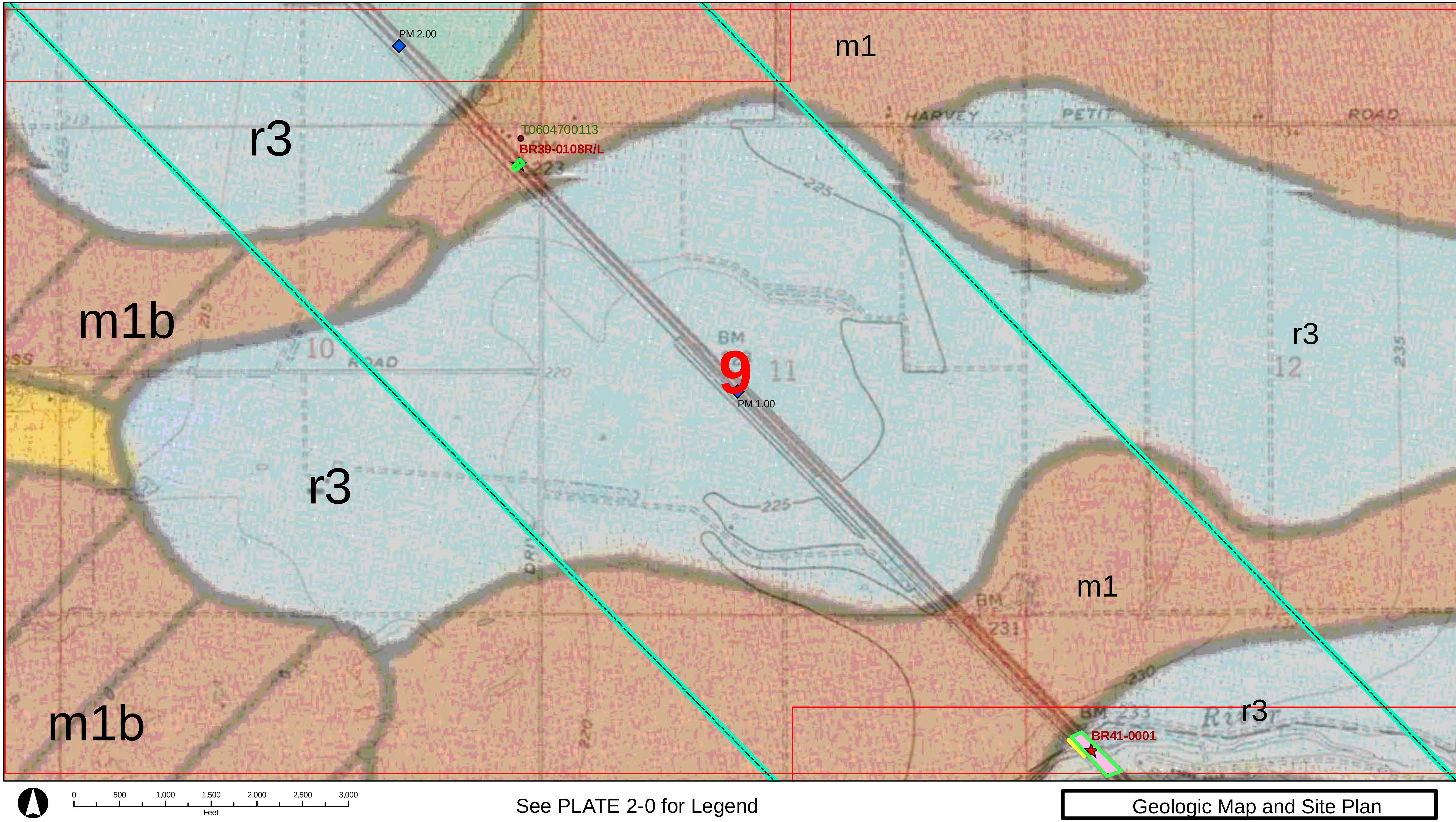
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-8



See PLATE 2-0 for Legend

Geologic Map and Site Plan

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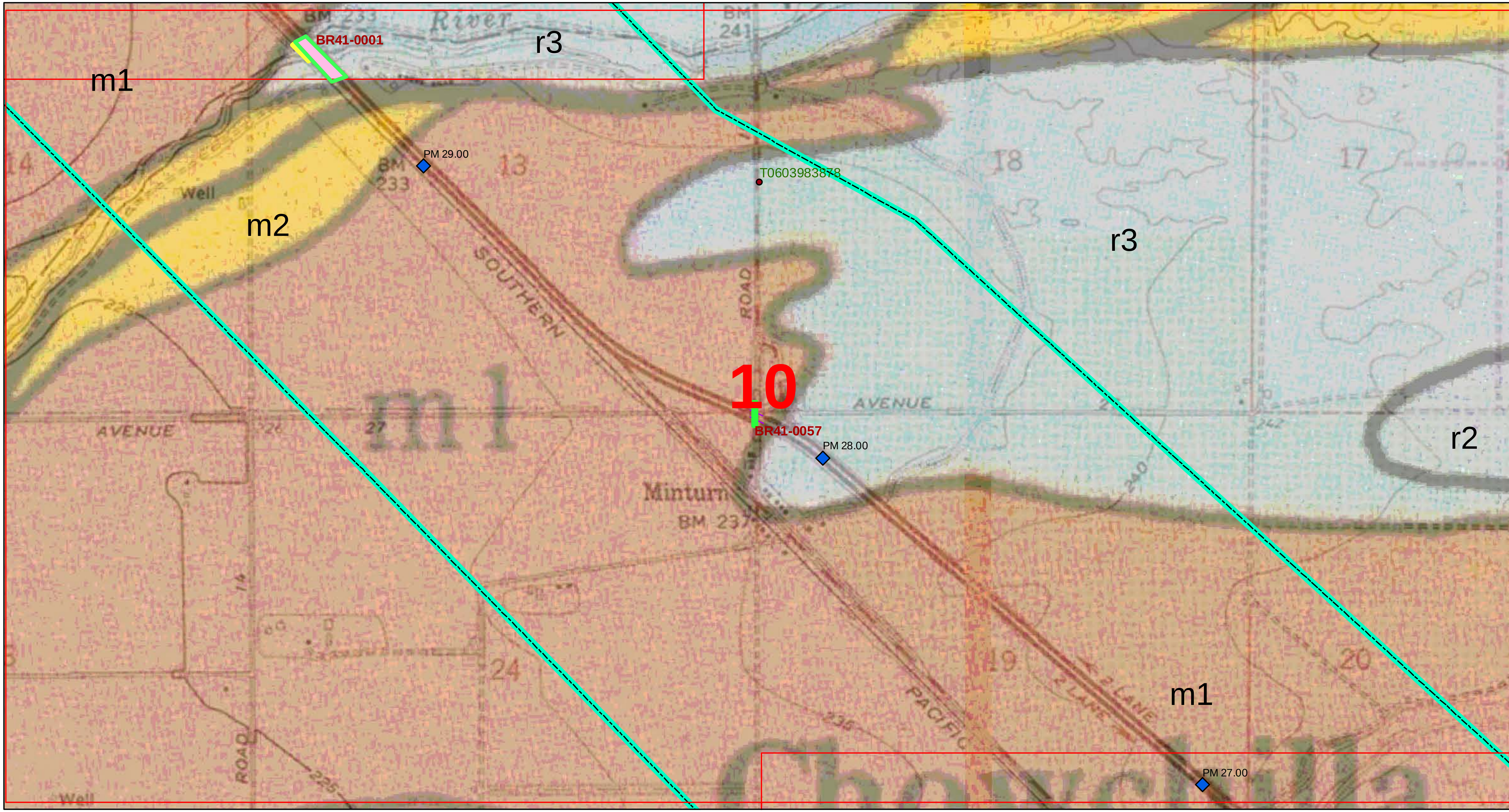
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-9



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See PLATE 2-0 for Legend

Geologic Map and Site Plan

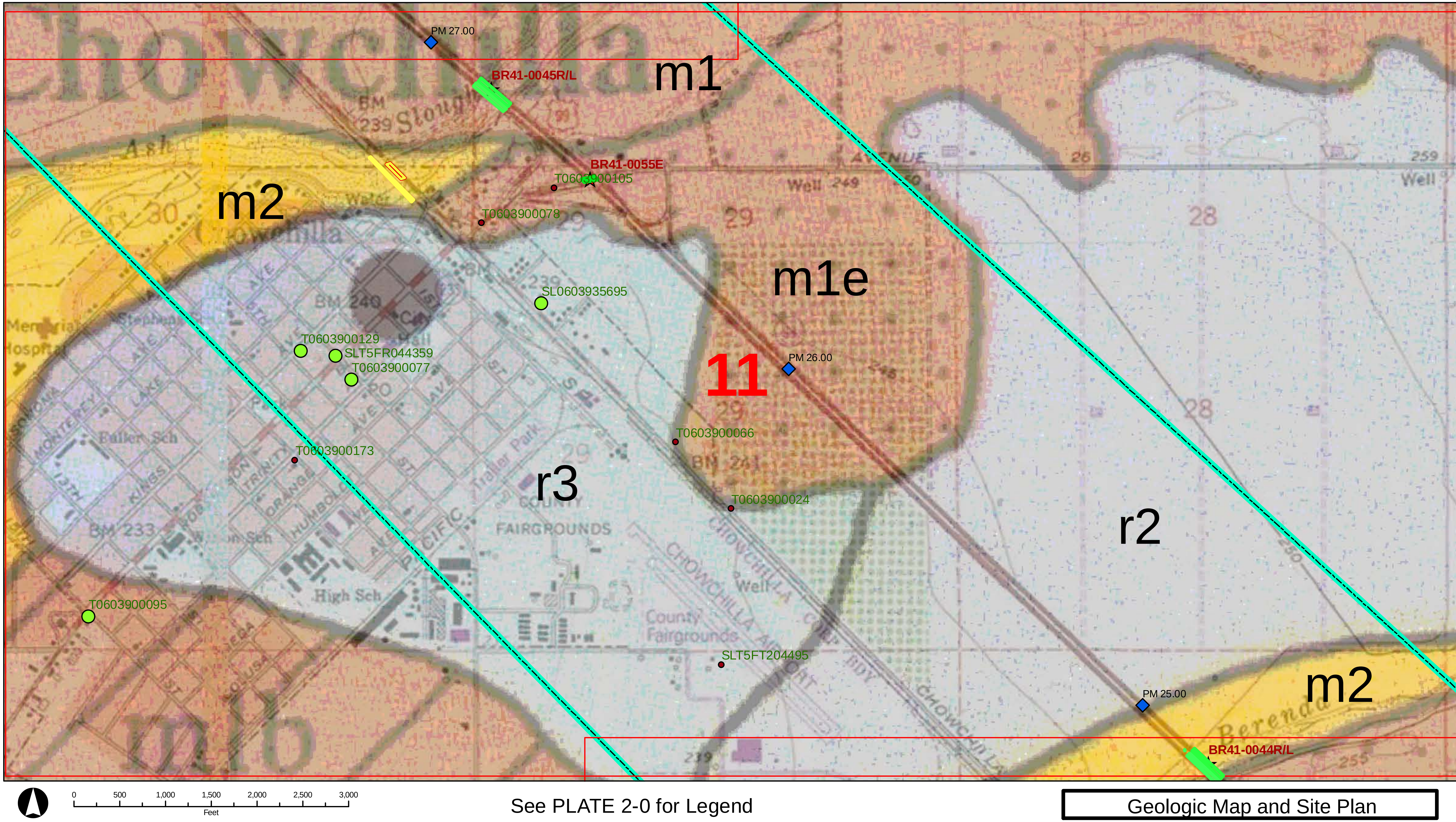
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-10



See PLATE 2-0 for Legend

Geologic Map and Site Plan

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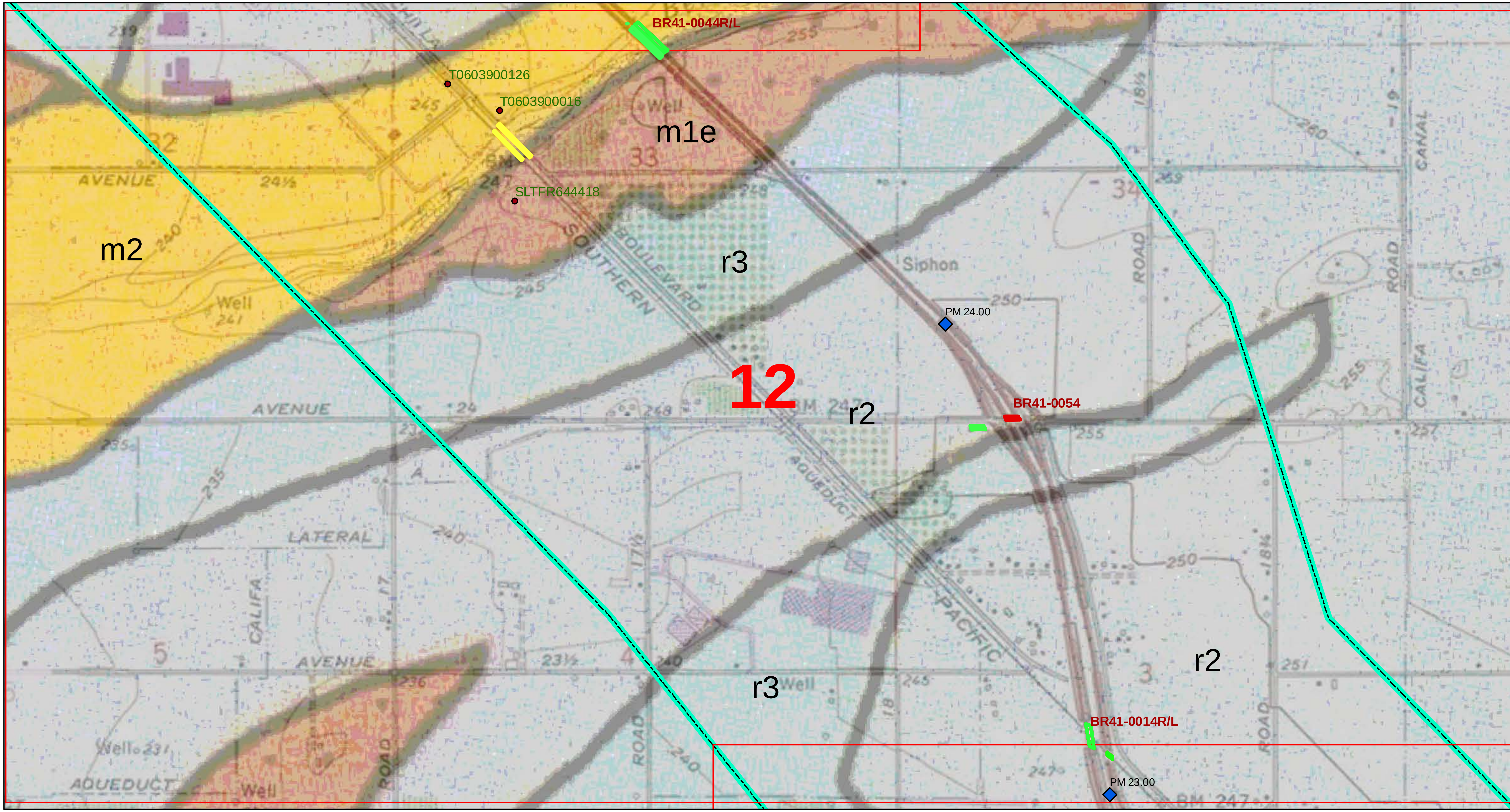
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-11



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See PLATE 2-0 for Legend

Geologic Map and Site Plan

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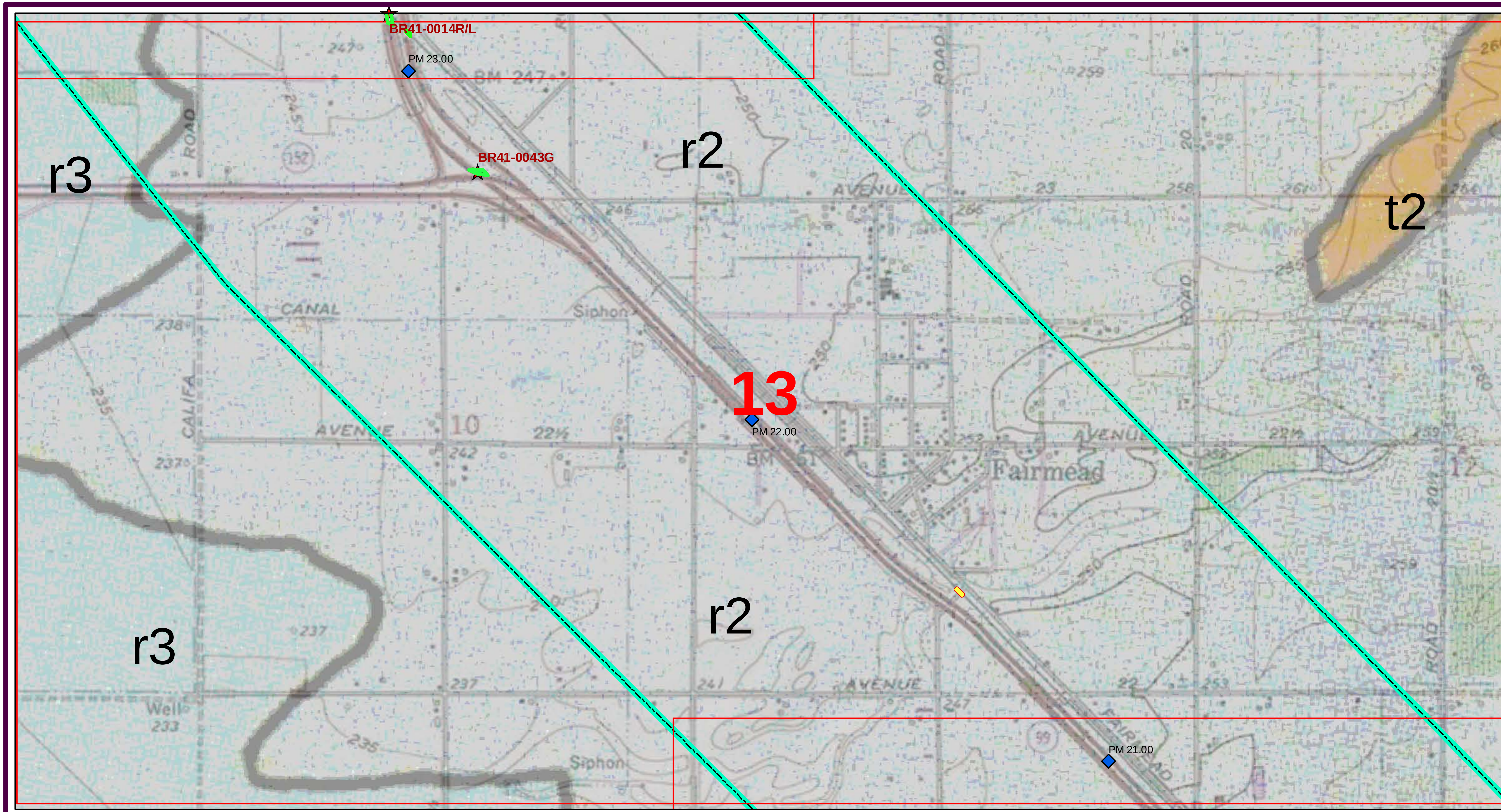
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-12



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Feet

See PLATE 2-0 for Legend

Geologic Map and Site Plan

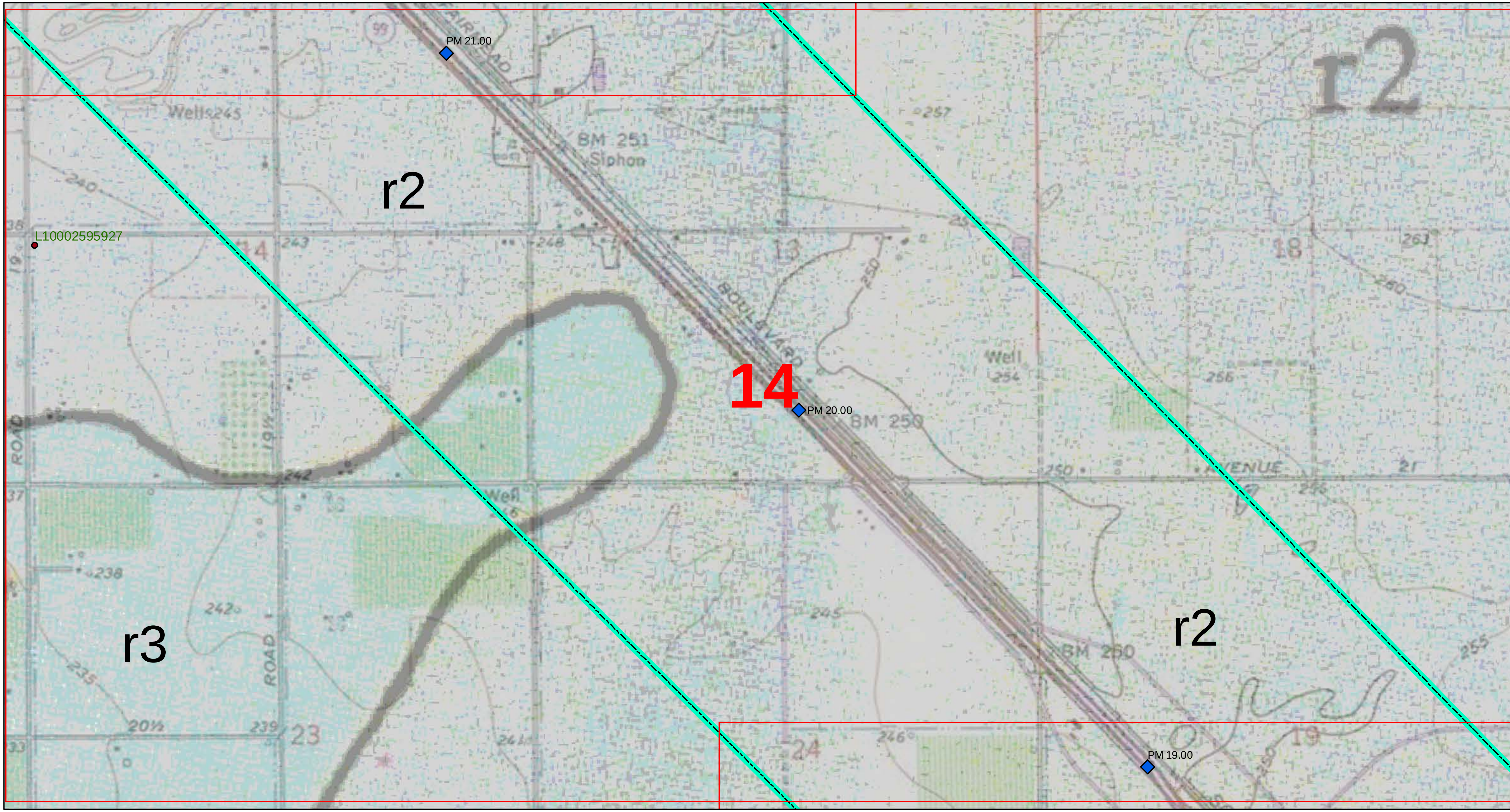
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-13



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Feet

See PLATE 2-0 for Legend

Geologic Map and Site Plan

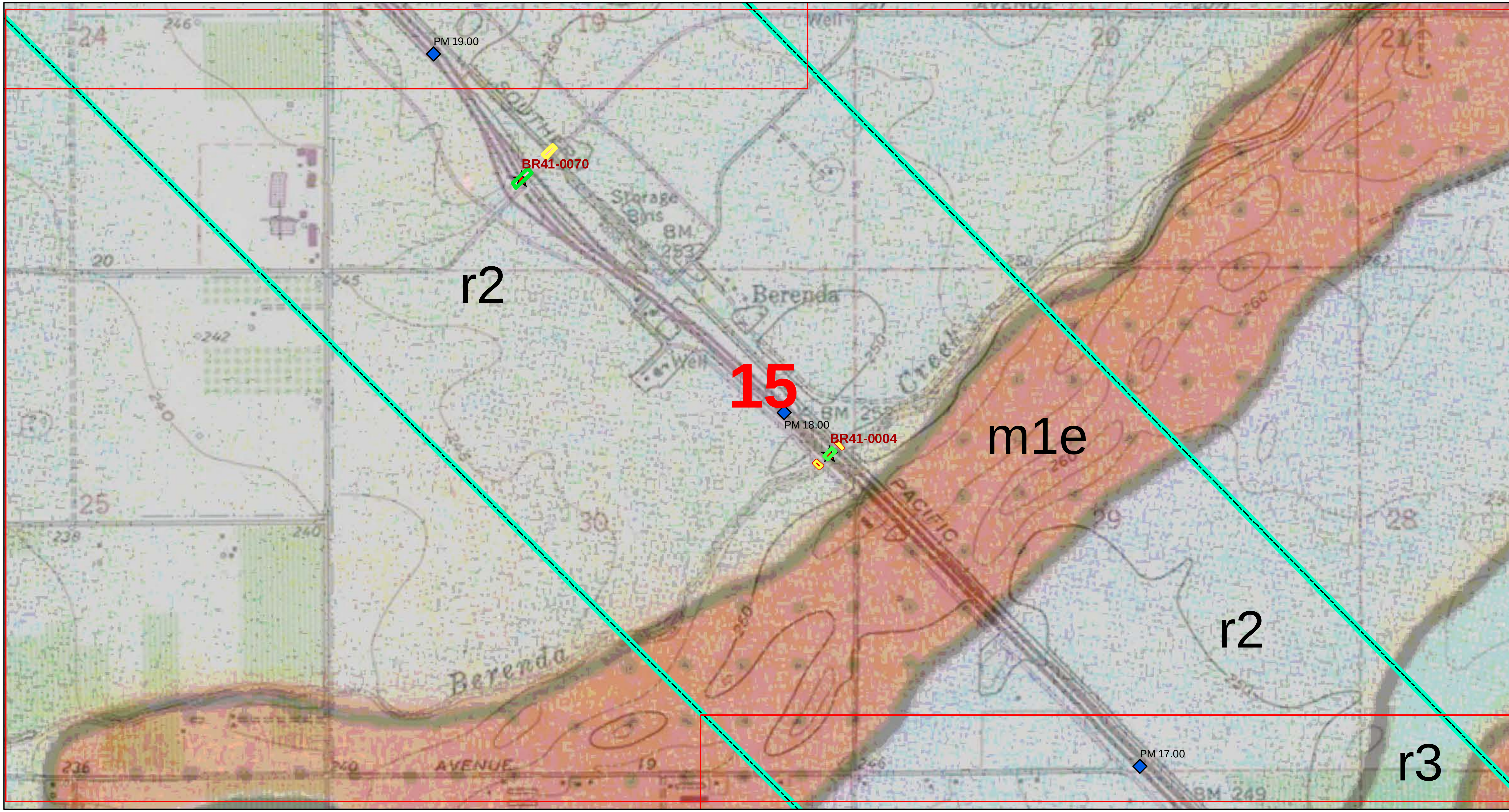
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-14



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Feet

See PLATE 2-0 for Legend

Geologic Map and Site Plan

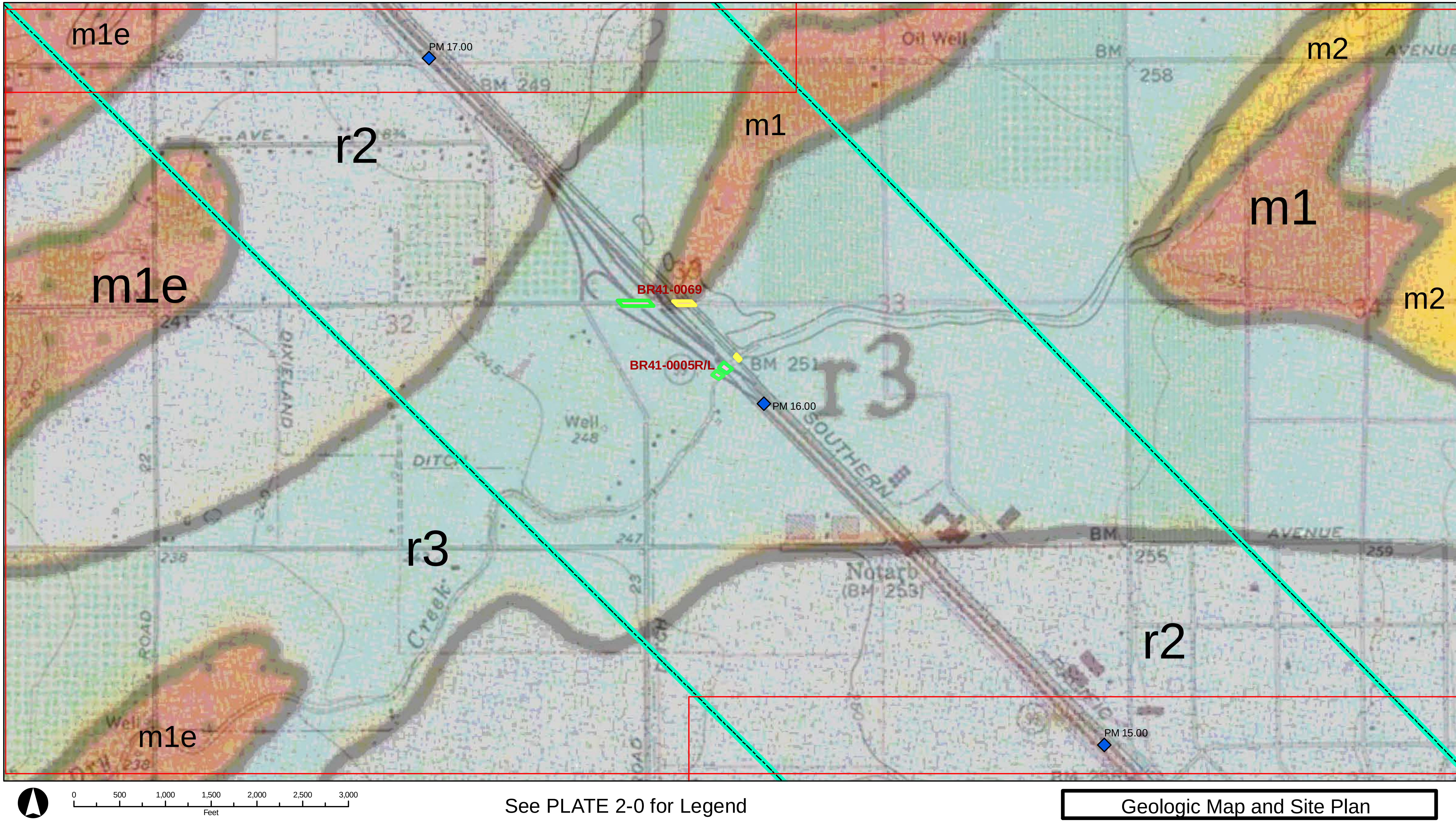
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-15



See PLATE 2-0 for Legend

Geologic Map and Site Plan

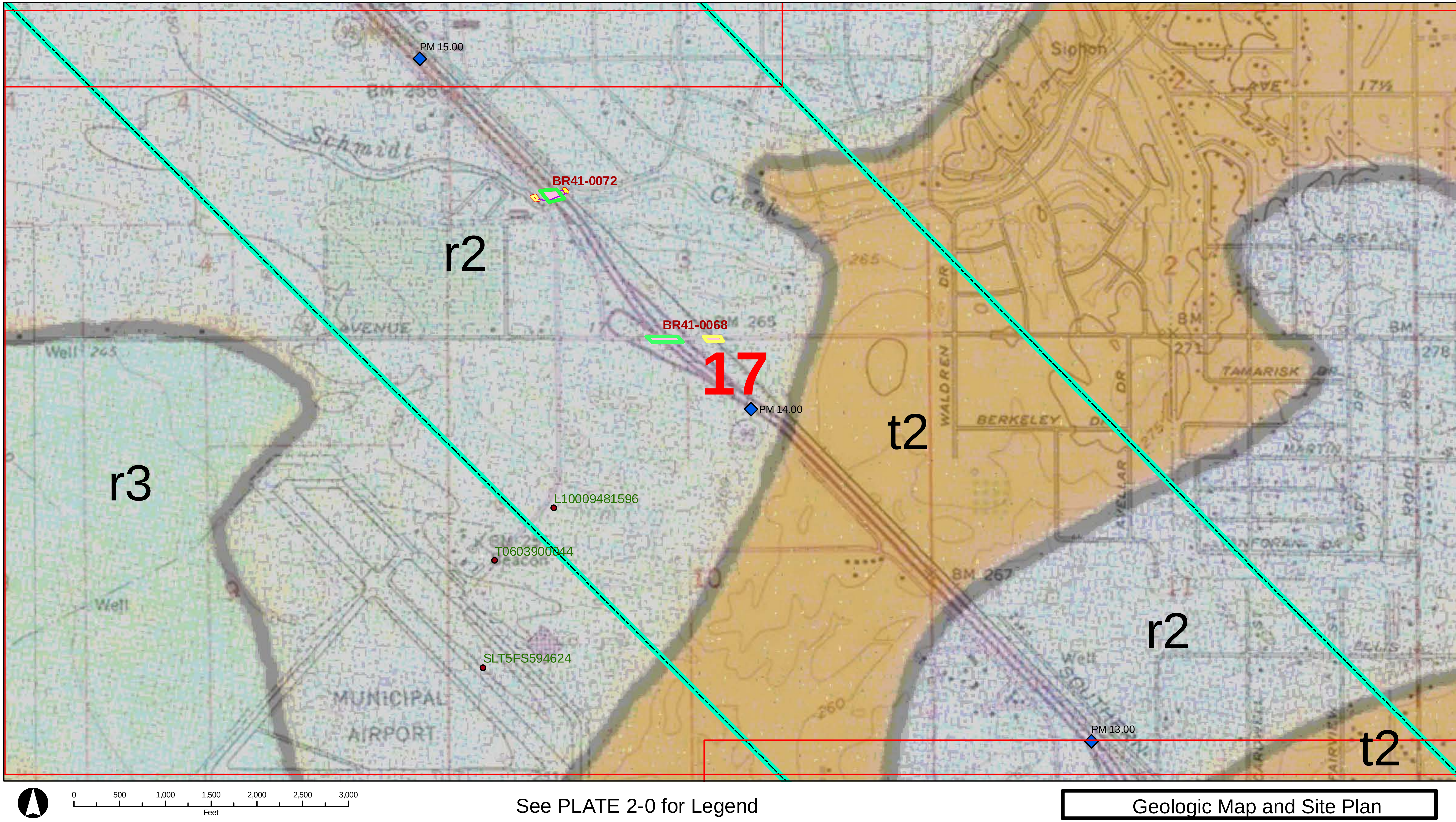
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-16



See PLATE 2-0 for Legend

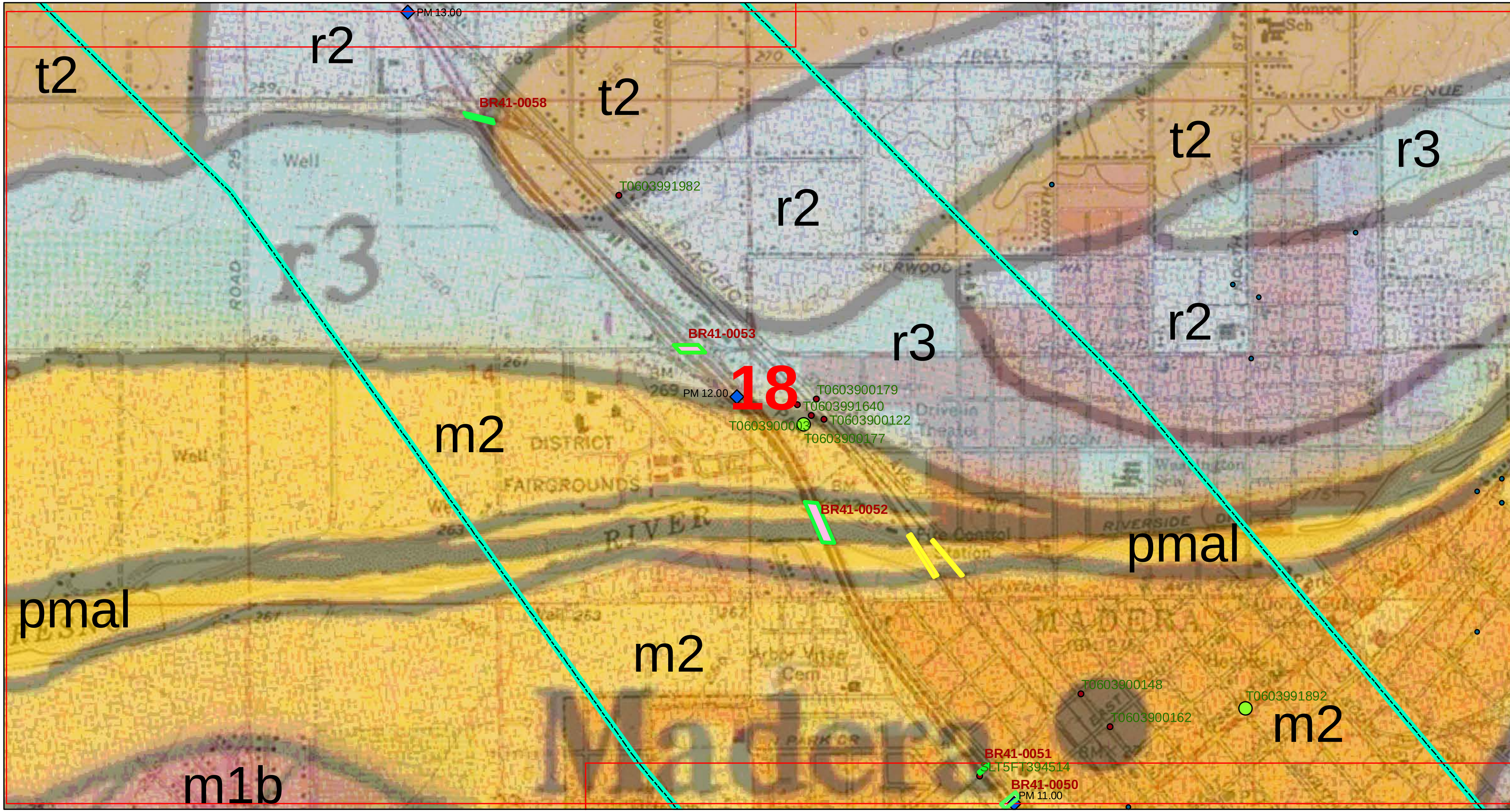
Geologic Map and Site Plan

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10 PLATE NO.: 2-17



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Feet

See PLATE 2-0 for Legend

Geologic Map and Site Plan

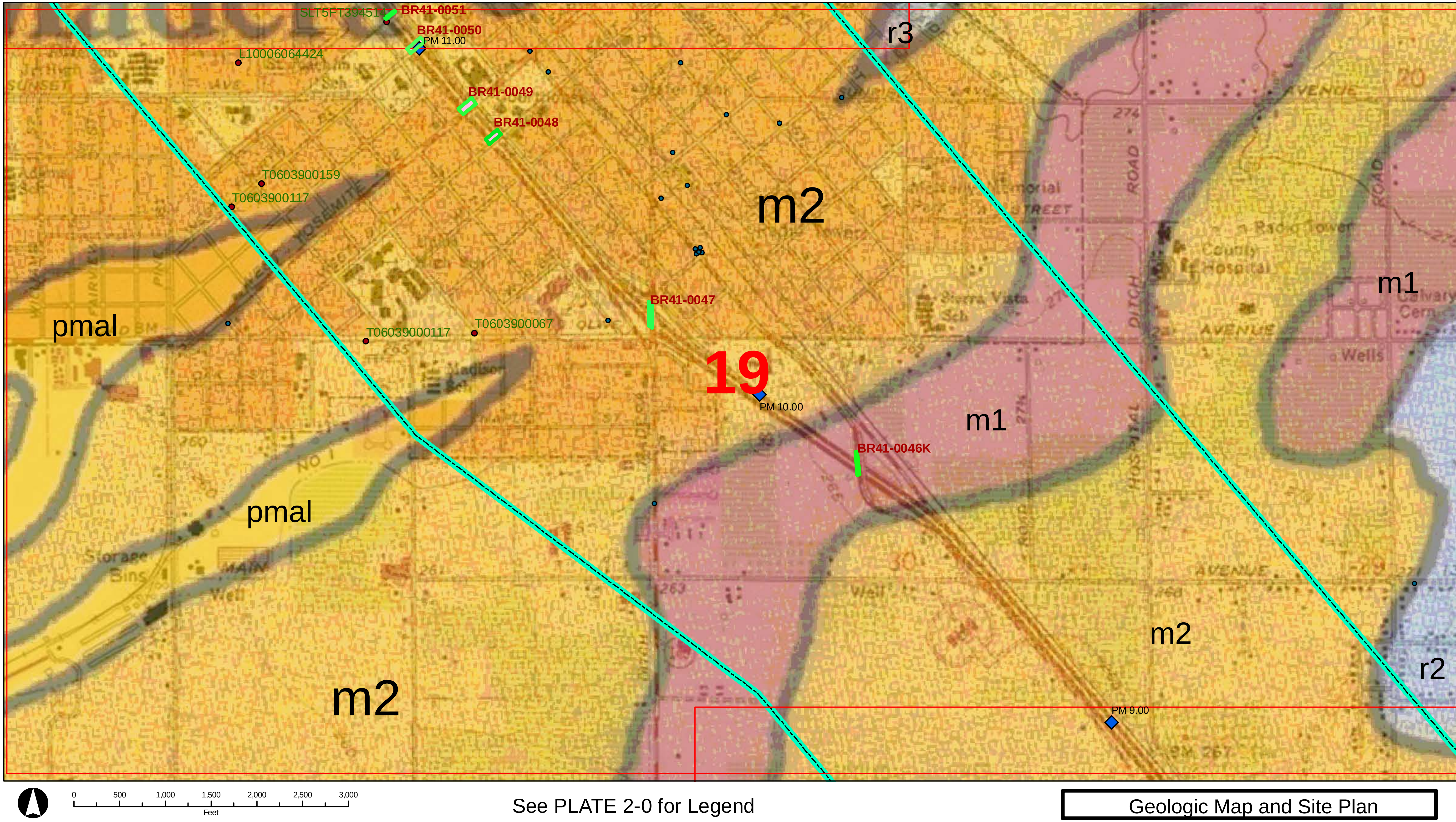
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-18



See PLATE 2-0 for Legend

Geologic Map and Site Plan

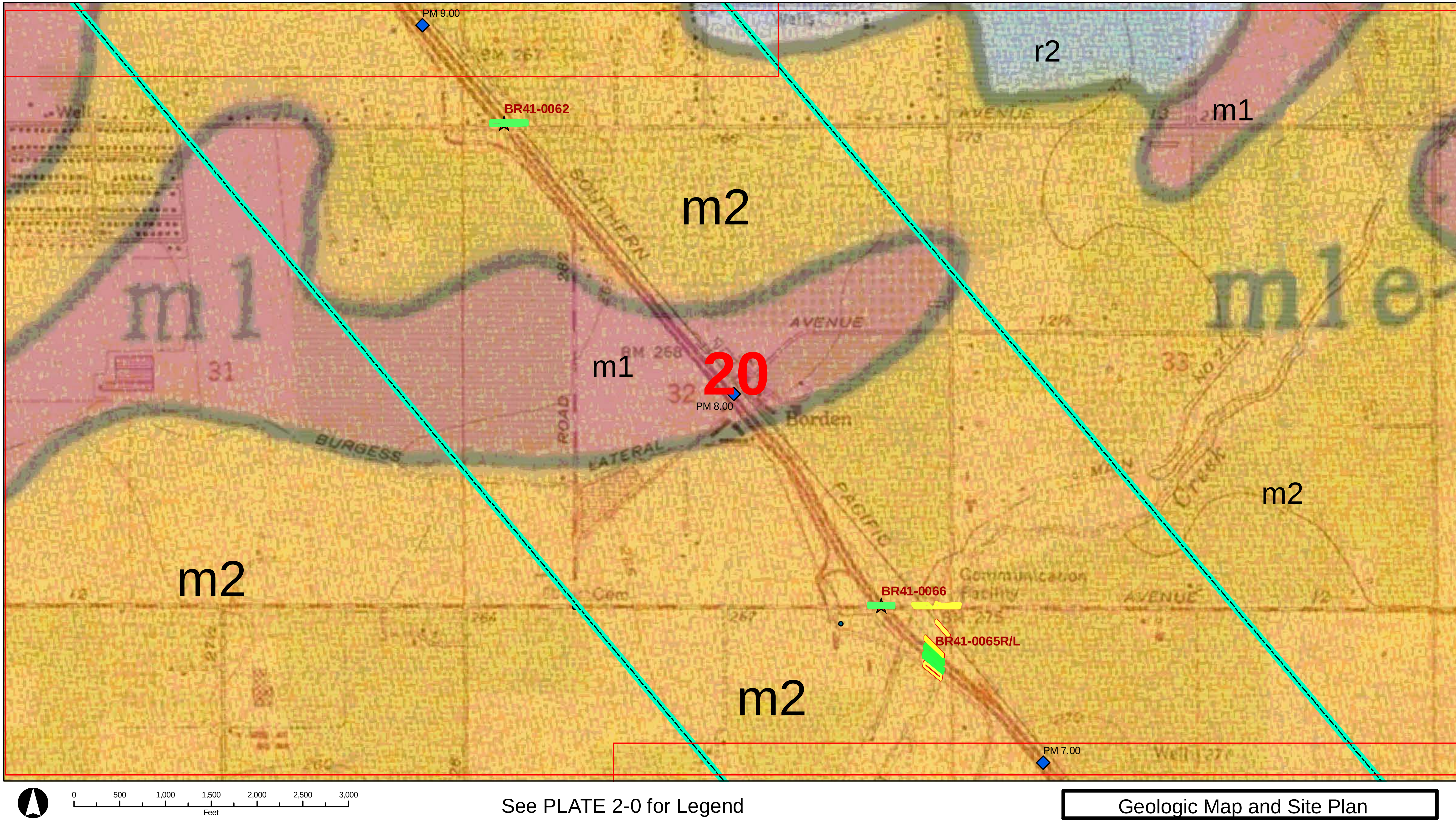
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-19



See PLATE 2-0 for Legend

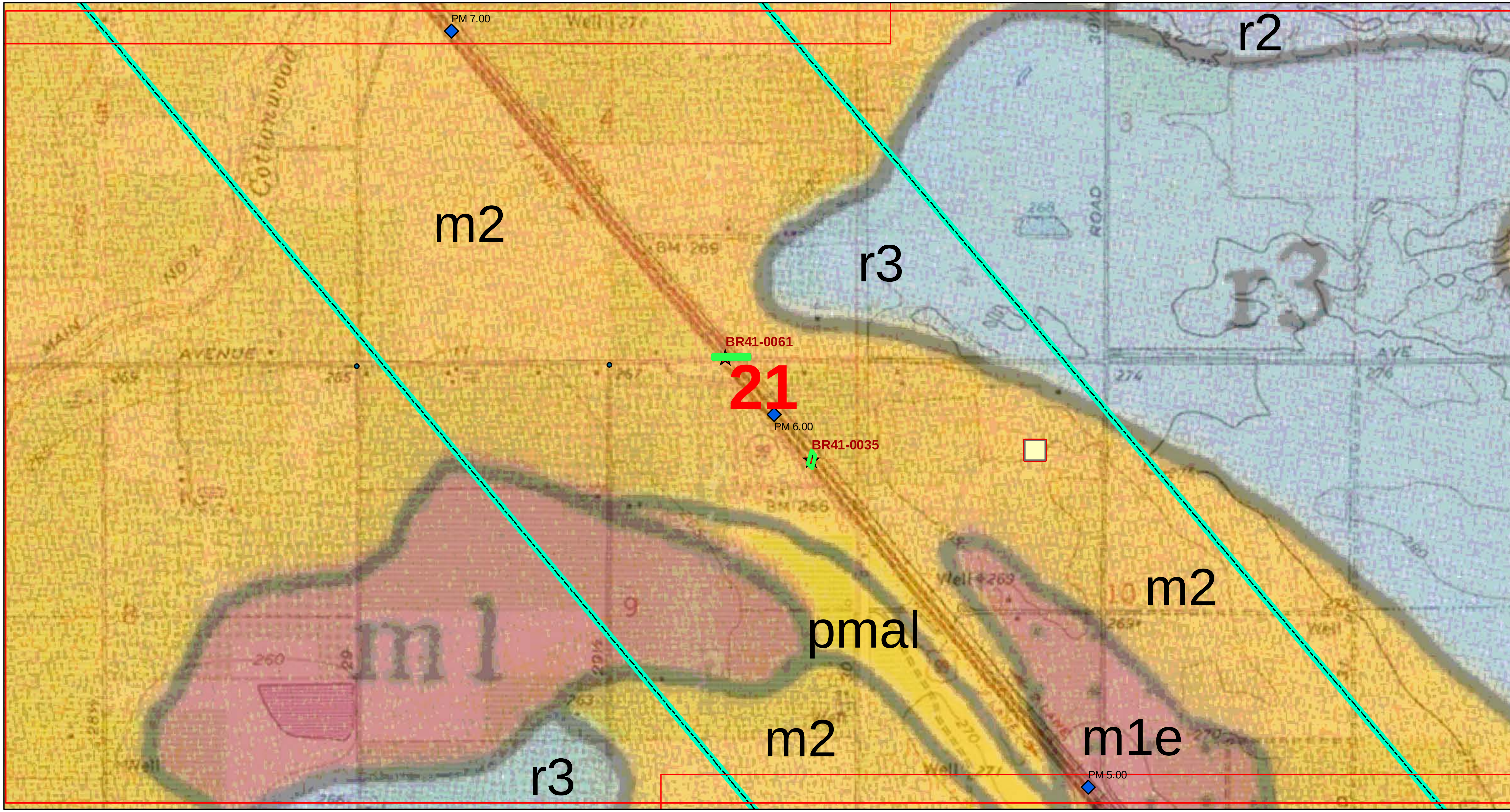
Geologic Map and Site Plan

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10 PLATE NO.: 2-20



0 500 1,000 1,500 2,000 2,500 3,000
Feet

See PLATE 2-0 for Legend

Geologic Map and Site Plan

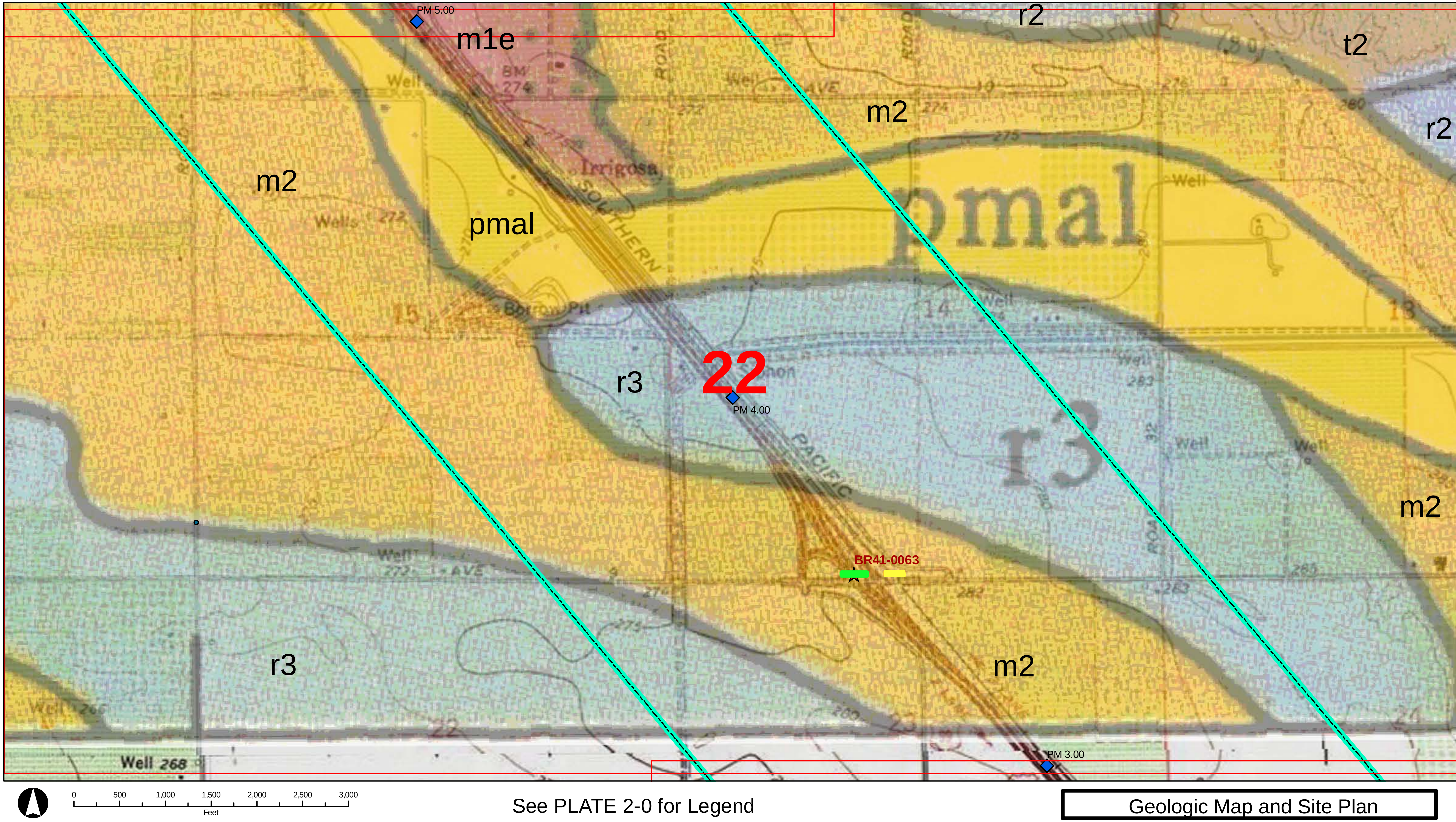
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites.

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-21



See PLATE 2-0 for Legend

Geologic Map and Site Plan

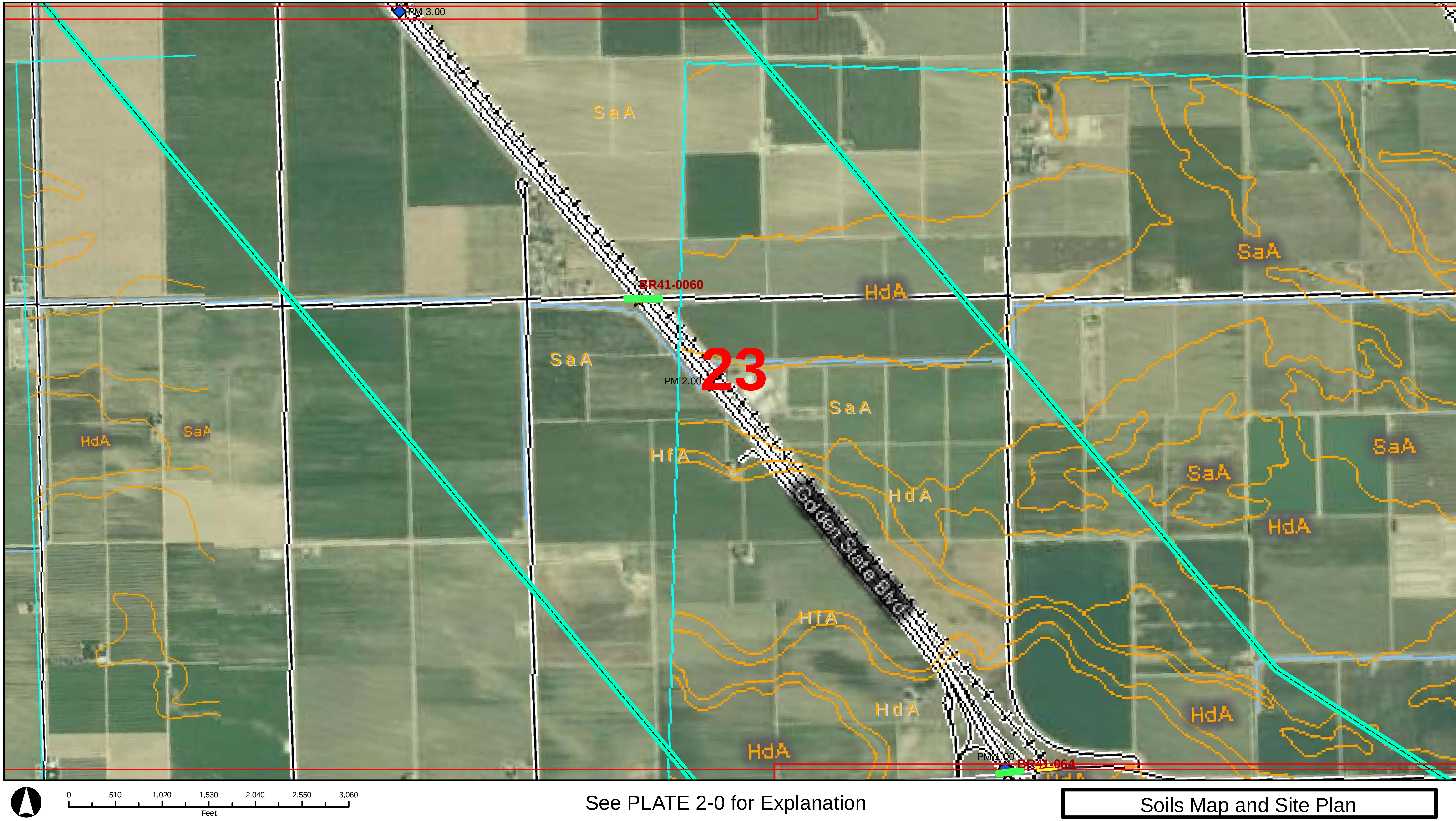
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
Geology from Marchand and Allwardt; 1981; USGS Bulletin 1470.
Caltrans bridges.
GeoTracker sites

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-22



See PLATE 2-0 for Explanation

Soils Map and Site Plan

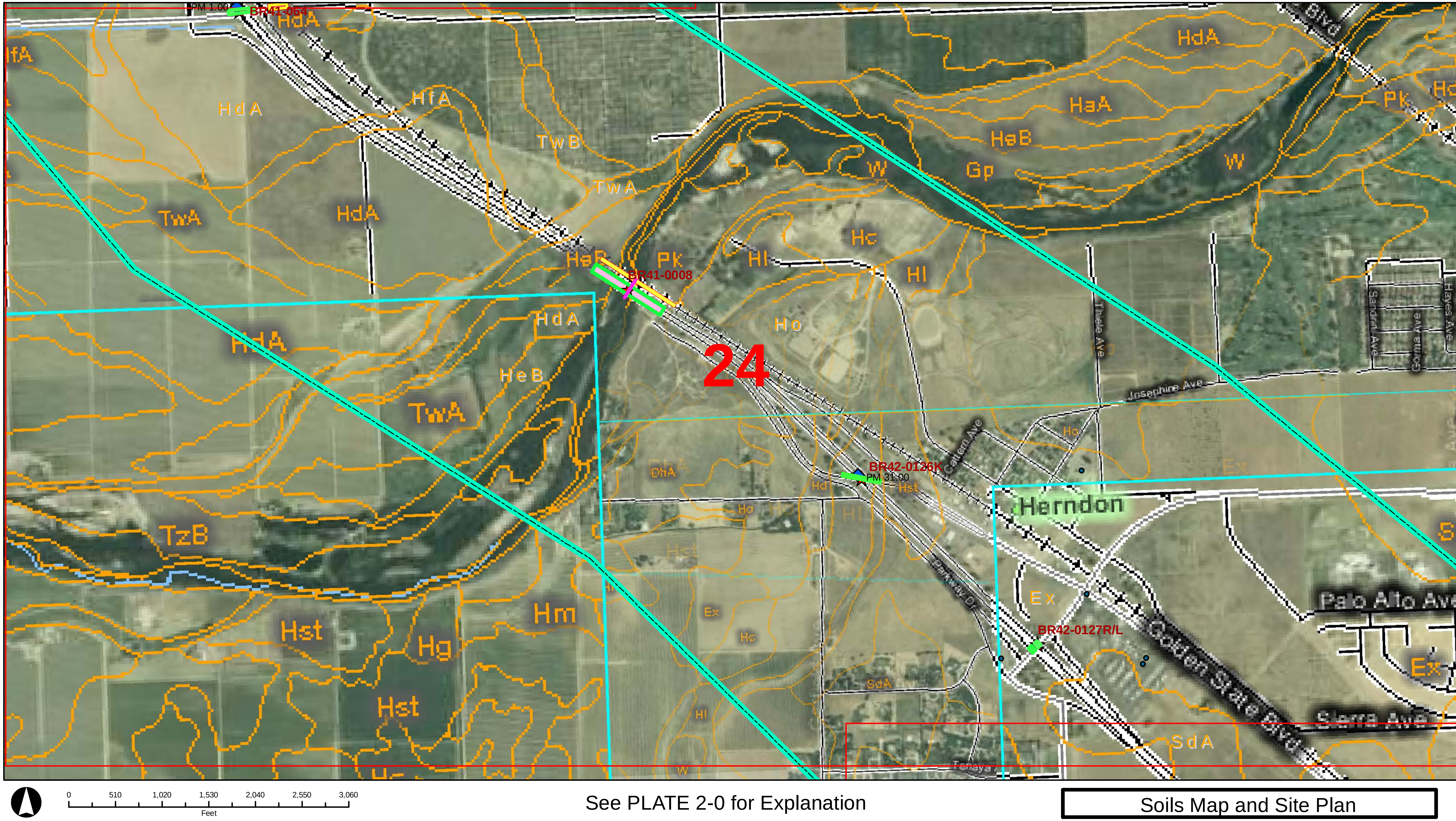
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
geology from Marchand and Allwardt; 1981; USGS
soils units from NRCS
bridges from Caltrans
tank leak sites from GeoTracker website

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-23



See PLATE 2-0 for Explanation

Soils Map and Site Plan

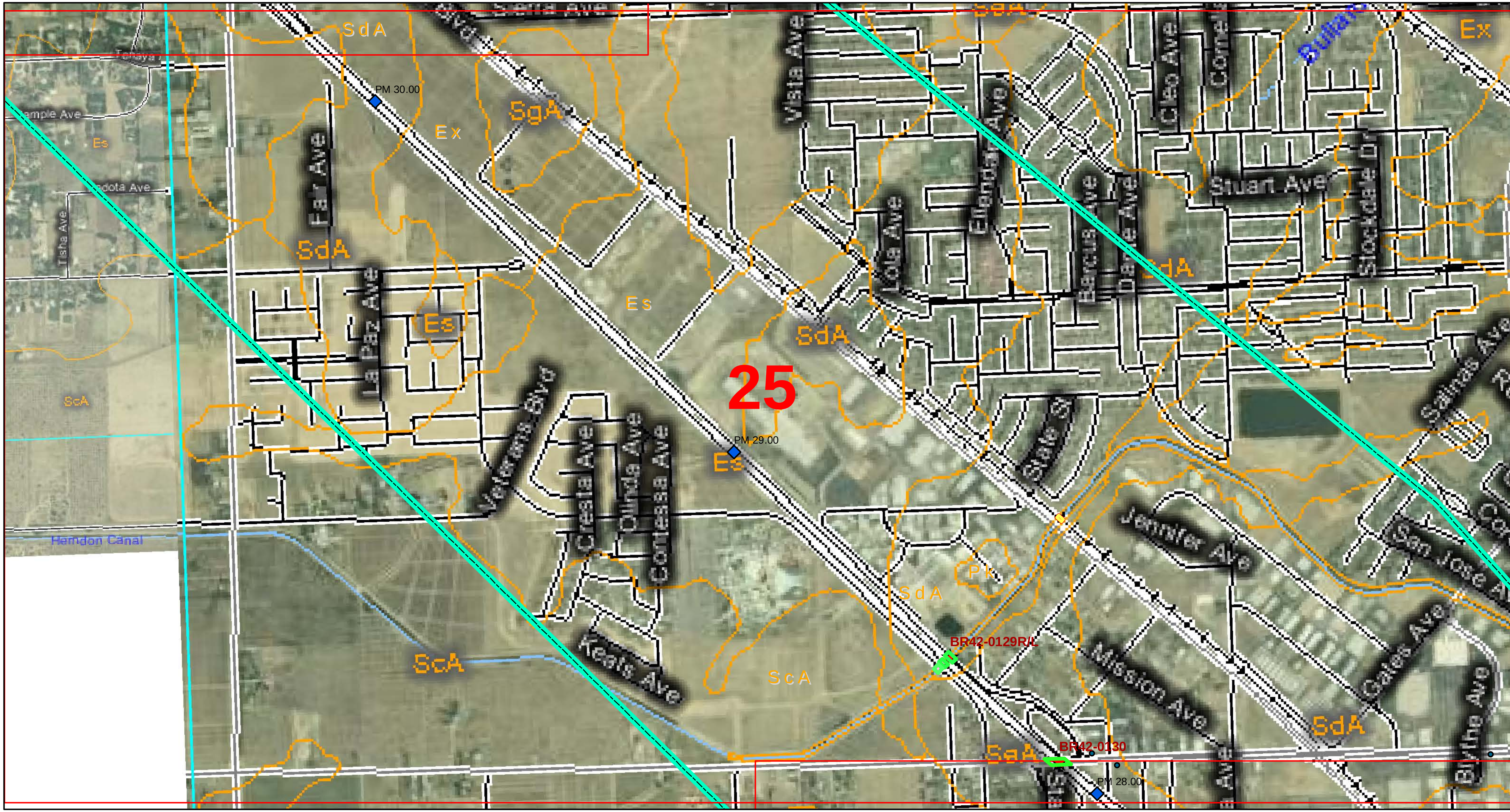
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
geology from Marchand and Allwardt; 1981; USGS
soils units from NRCS
bridges from Caltrans
tank leak sites from GeoTracker website

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-24



0 510 1,020 1,530 2,040 2,550 3,060
Feet

See PLATE 2-0 for Explanation

Soils Map and Site Plan

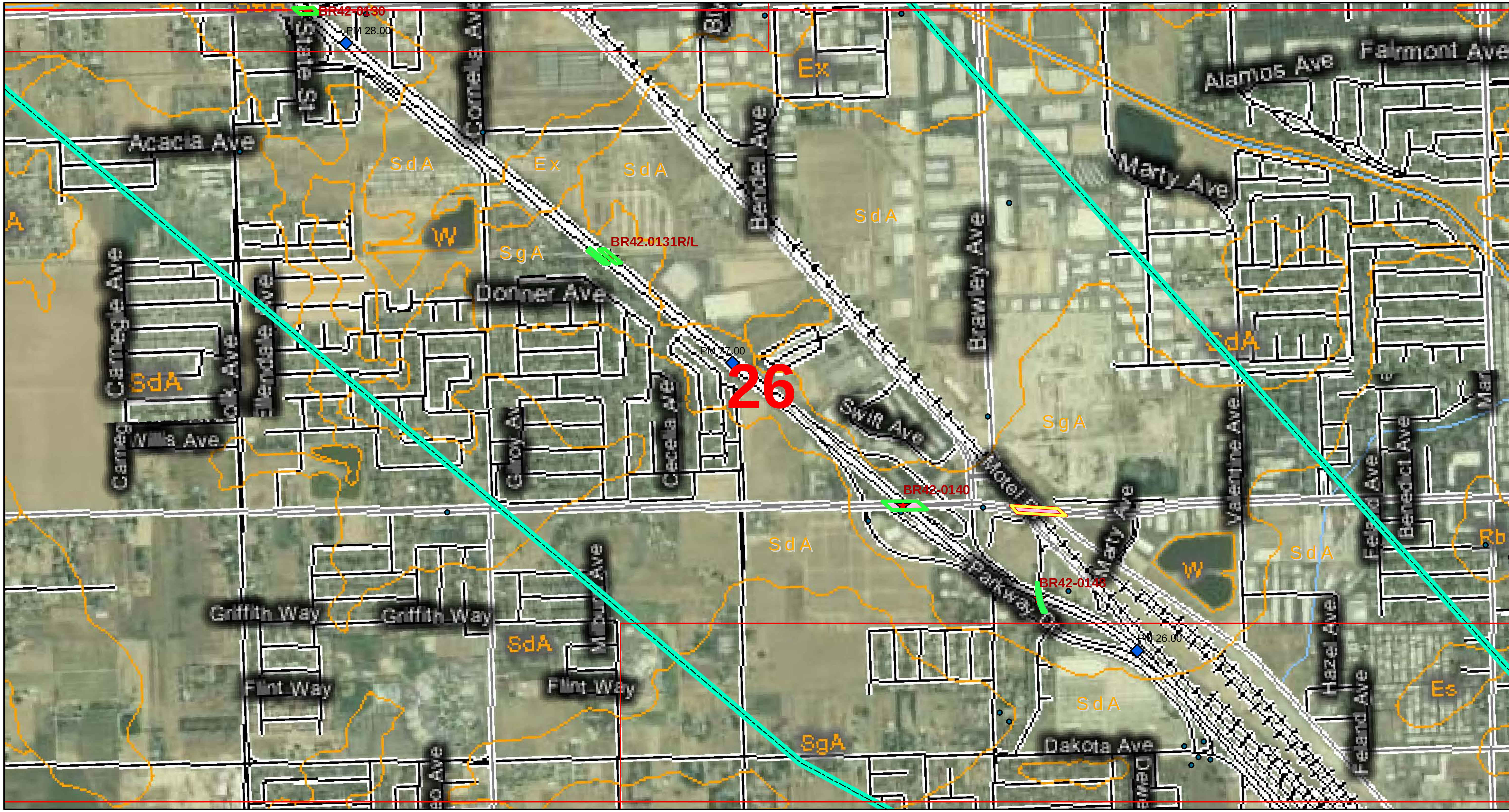
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
geology from Marchand and Allwardt; 1981; USGS
soils units from NRCS
bridges from Caltrans
tank leak sites from GeoTracker website

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-25



0 510 1,020 1,530 2,040 2,550 3,060
Feet

See PLATE 2-0 for Explanation

Soils Map and Site Plan

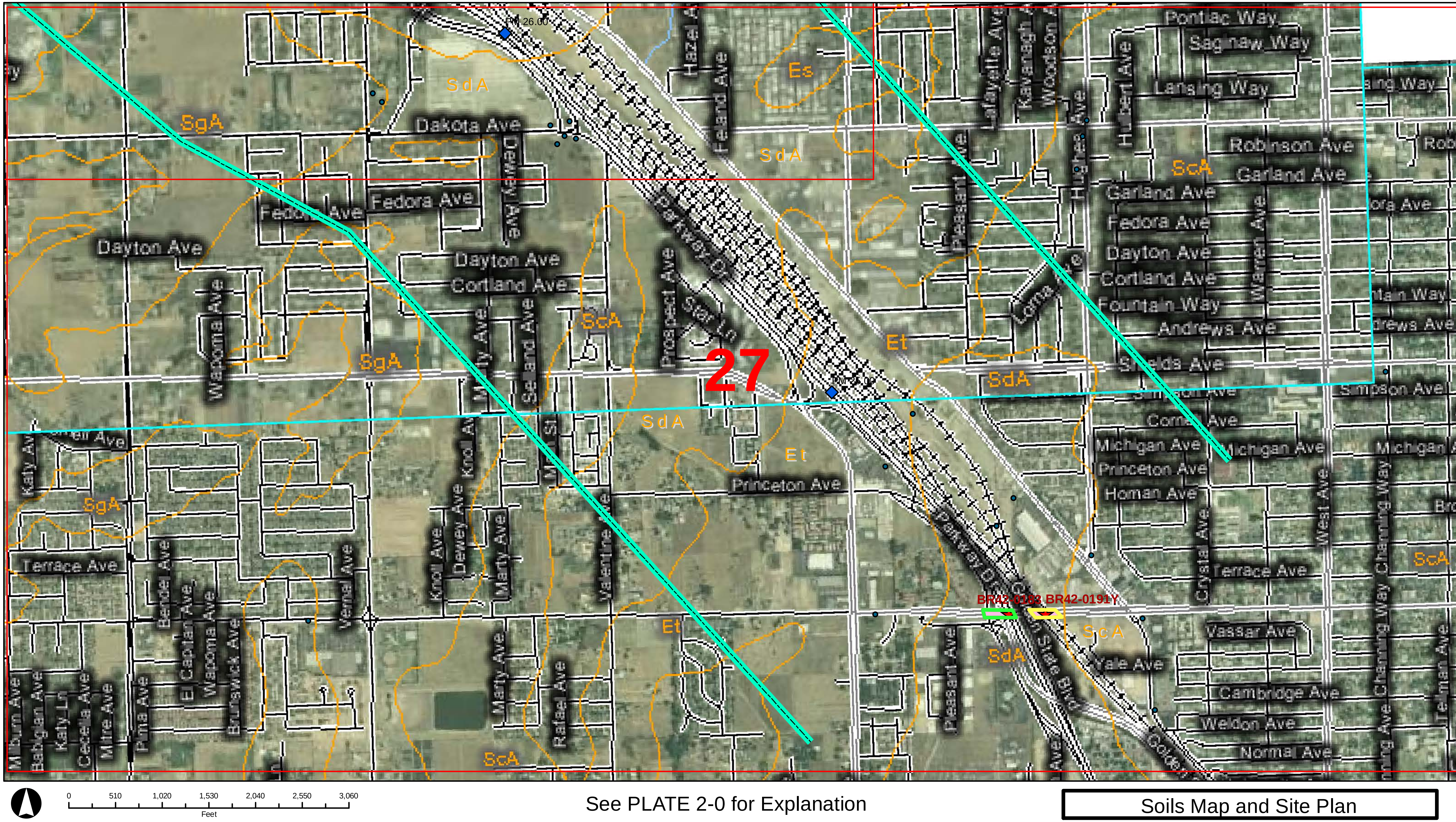
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
geology from Marchand and Allwardt; 1981; USGS
soils units from NRCS
bridges from Caltrans
tank leak sites from GeoTracker website

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-26



Soils Map and Site Plan

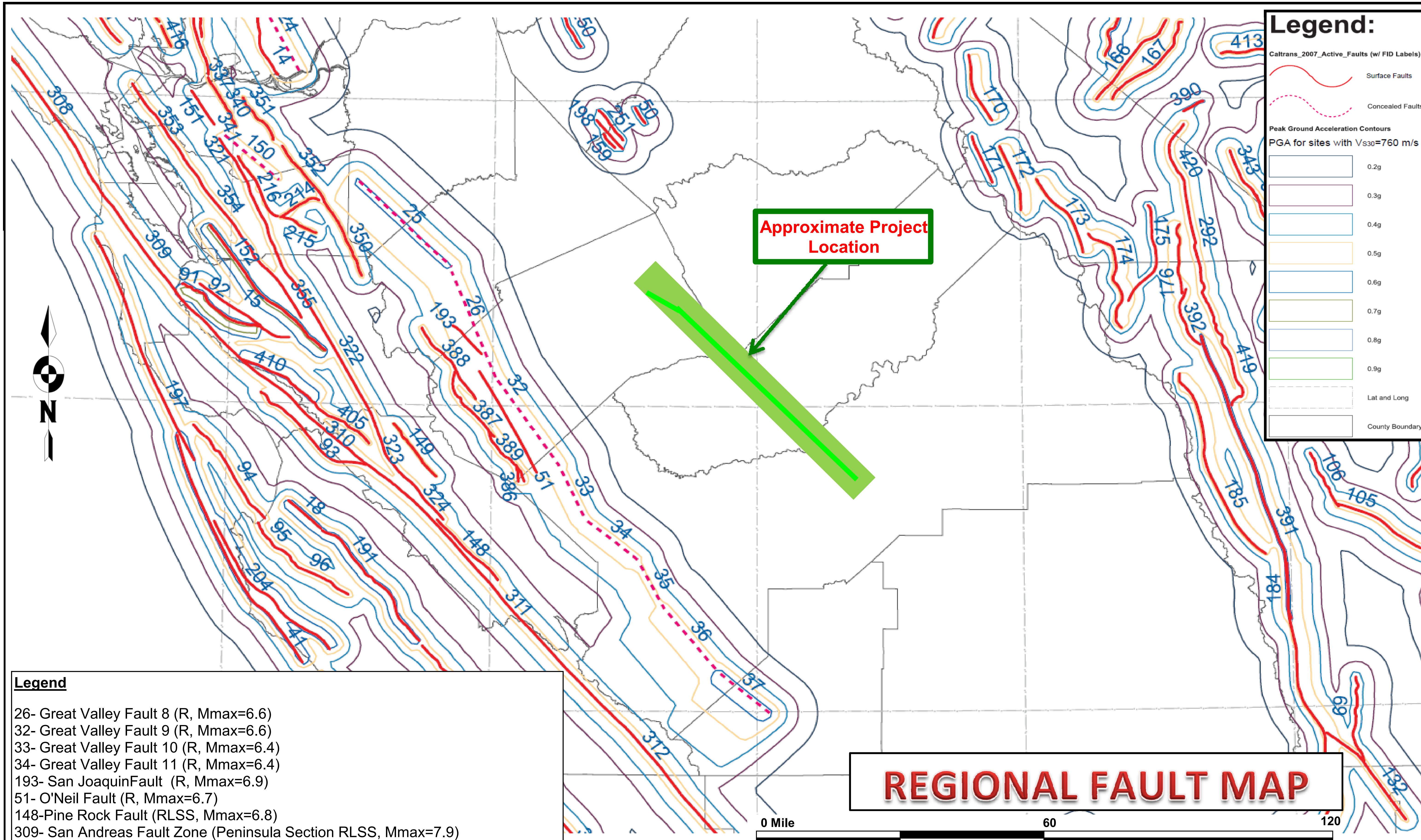
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SOURCES:
geology from Marchand and Allwardt; 1981; USGS
soils units from NRCS
bridges from Caltrans
tank leak sites from GeoTracker website

California High-Speed Train Project
(Merced - Fresno Section)

JOB NO.: 209138.10

PLATE NO.: 2-27



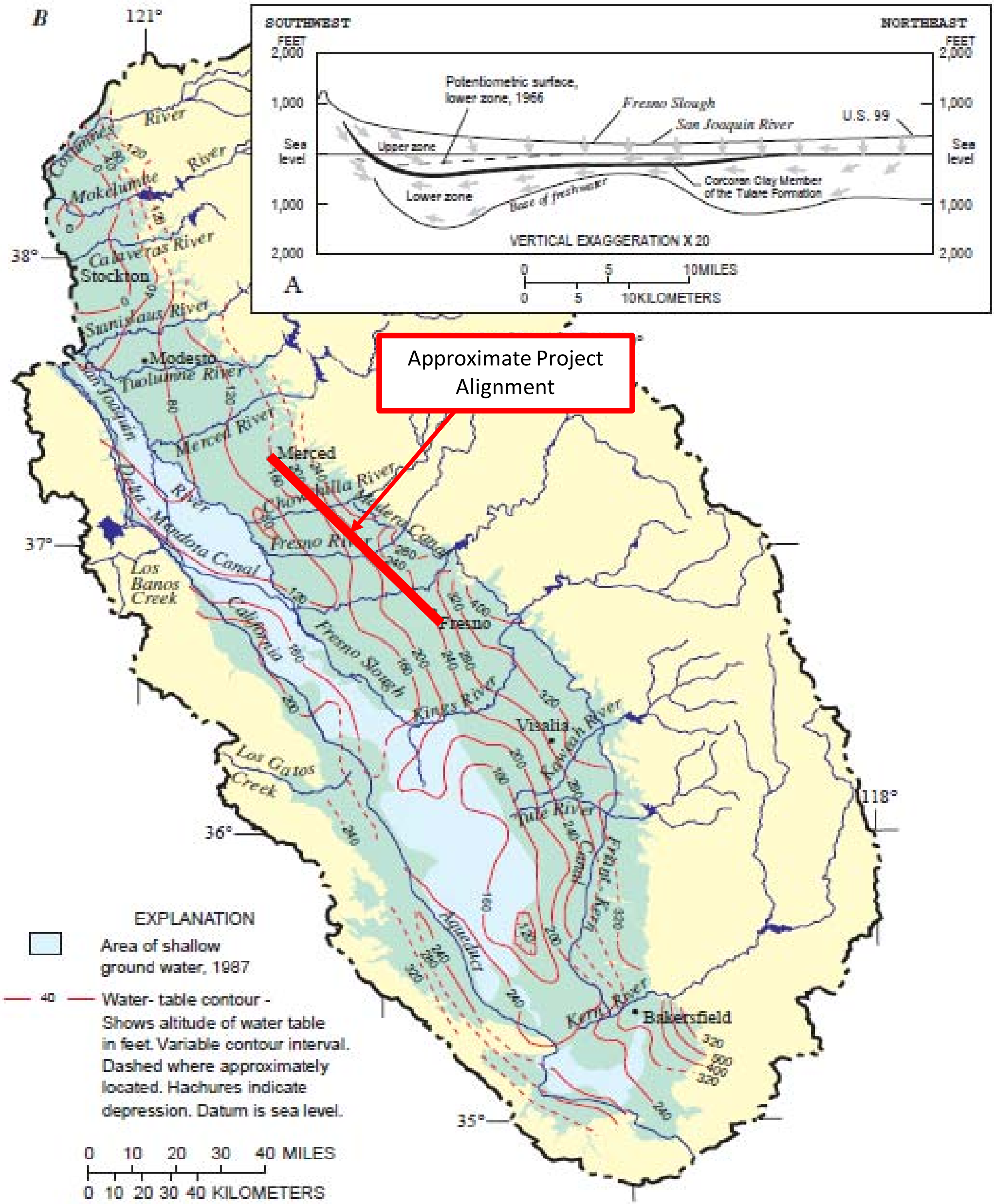
Legend

26- Great Valley Fault 8 (R, Mmax=6.6)
32- Great Valley Fault 9 (R, Mmax=6.6)
33- Great Valley Fault 10 (R, Mmax=6.4)
34- Great Valley Fault 11 (R, Mmax=6.4)
193- San JoaquinFault (R, Mmax=6.9)
51- O'Neil Fault (R, Mmax=6.7)
148-Pine Rock Fault (RLSS, Mmax=6.8)
309- San Andreas Fault Zone (Peninsula Section RLSS, Mmax=7.9)
310- San Andreas Fault Zone (Santa Cruz Mountain Section RLSS, Mmax=7.9)
311- San Andreas Fault Zone (Creeping Section RLSS, Mmax=7.9)
312- San Andreas Fault Zone (Parkfield Section RLSS, Mmax=7.9)

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

CALIFORNIA HIGH SPEED TRAIN PROJECT
MERCED- FRESNO SECTION

JOB NO.: 209138.10	PLATE NO.: 3



Source: Ground-water flow conditions in the San Joaquin Valley, California, 1966 (Bertoldi and others, 1991). (*B*) Water table in 1976 (modified from Williamson and others, 1989) and area of shallow ground water in 1987, San Joaquin Valley, California (San Joaquin Valley Drainage Program, 1990b).

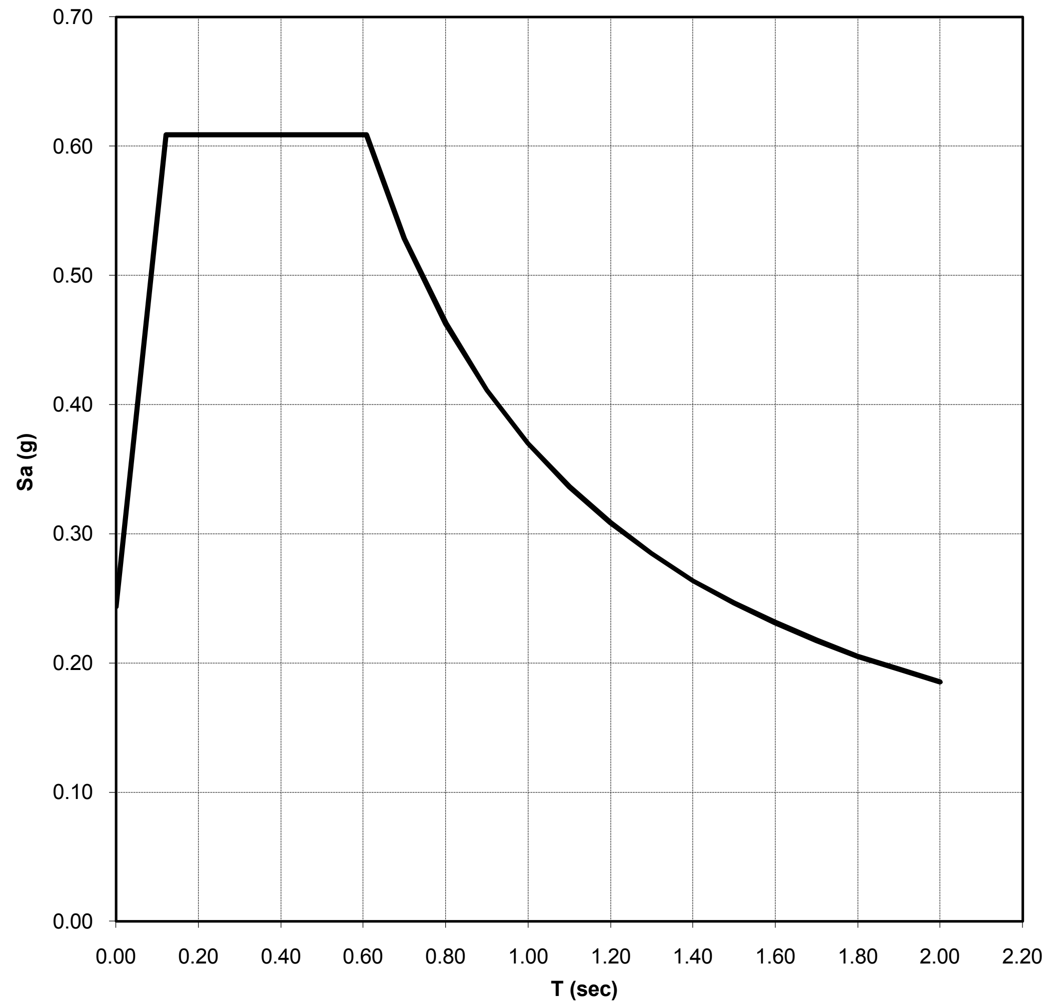
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

CALIFORNIA HIGH-SPEED TRAIN PROJECT
MERCED-FRESNO SECTION

JOB NO.:209138.10	PLATE NO.: 4

Conterminous 48 States
2005 ASCE 7 STANDARD
Latitude = 36.71768
Longitude = -119.78458
Design Response Spectra for Site Class Site Class D
SDs = 2/3 x SMs and SD1 = 2/3 x SM1
Site Class D - Fa = 1.375 ,Fv = 1.943
Importance Factor, I=1.25

Period (sec)	Sa (g)
0.000	0.244
0.122	0.609
0.200	0.609
0.608	0.609
0.700	0.529
0.800	0.463
0.900	0.411
1.000	0.370
1.100	0.336
1.200	0.309
1.300	0.285
1.400	0.264
1.500	0.246
1.600	0.231
1.700	0.218
1.800	0.205
1.900	0.195
2.000	0.185



MCE DESIGN SPECTRUM (FRESNO)

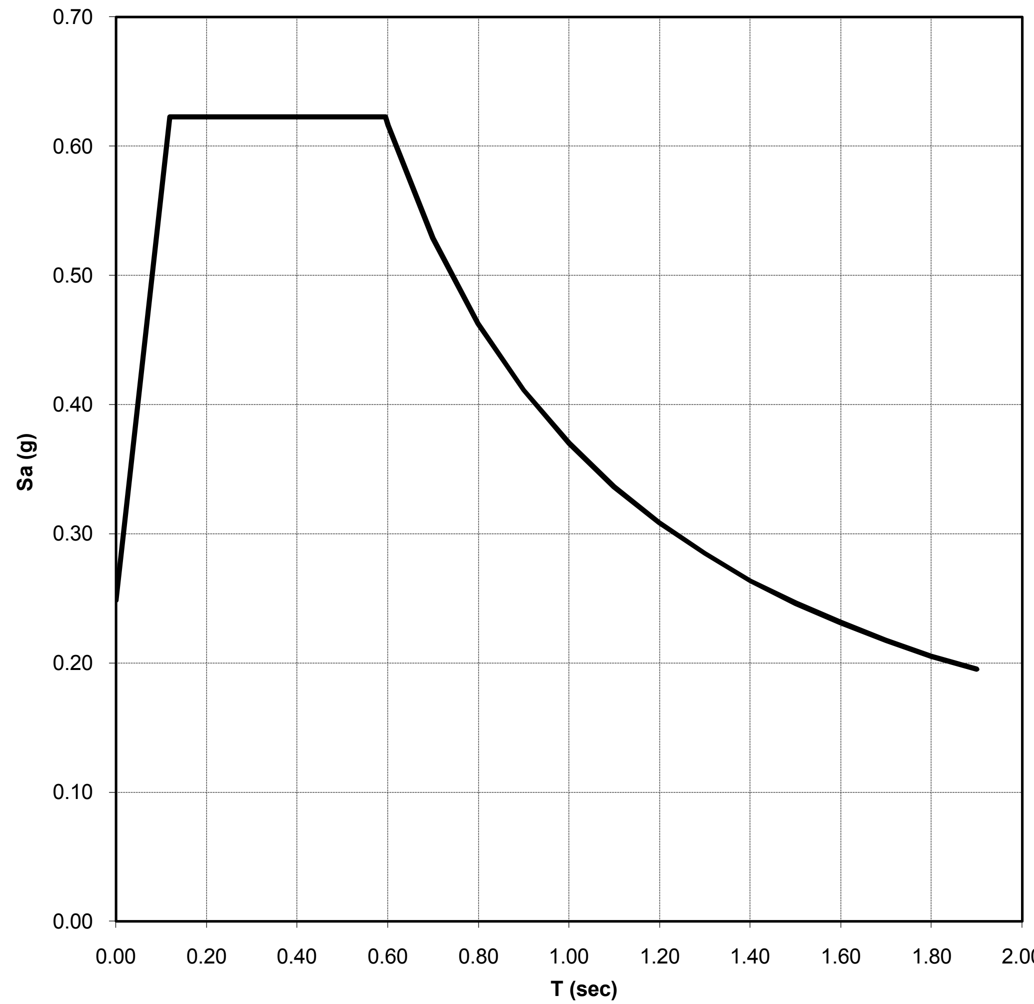
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

CALIFORNIA HIGH-SPEED TRAIN PROJECT
(MERCED-FRESNO SECTION)
MERCED-MADERA-FRESNO, CALIFORNIA

JOB NO.: 209138.10	**PLATE NO.: 5A**

Conterminous 48 States
2005 ASCE 7 STANDARD
Latitude = 36.96151
Longitude = -120.06479
Design Response Spectra for Site Class Site Class D
SDs = 2/3 x SMs and SD1 = 2/3 x SM1
Site Class D - Fa = 1.361 ,Fv = 1.943
Importance Factor, I=1.25

Period (sec)	Sa (g)
0.000	0.249
0.119	0.623
0.200	0.623
0.595	0.623
0.600	0.616
0.700	0.529
0.800	0.463
0.900	0.411
1.000	0.370
1.100	0.336
1.200	0.309
1.300	0.285
1.400	0.264
1.500	0.246
1.600	0.231
1.700	0.218
1.800	0.205
1.900	0.195



MCE DESIGN SPECTRUM (MADERA)

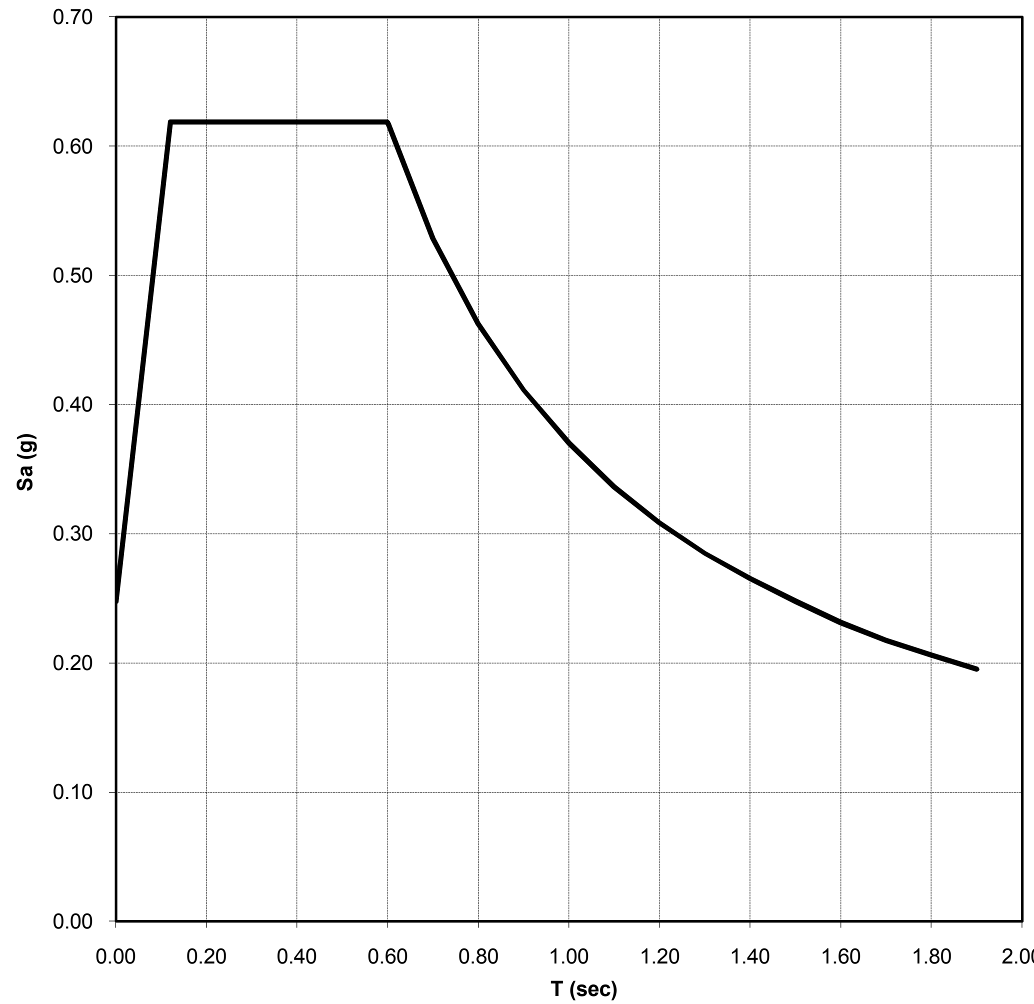
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

CALIFORNIA HIGH-SPEED TRAIN PROJECT
(MERCED-FRESNO SECTION)
MERCED-MADERA-FRESNO, CALIFORNIA

JOB NO.: 209138.10 | PLATE NO.: 5B

Conterminous 48 States
2005 ASCE 7 STANDARD
Latitude = 37.12691
Longitude = -120.2523
Design Response Spectra for Site Class Site Class D
SDs = 2/3 x SMs and SD1 = 2/3 x SM1
Site Class D - Fa = 1.364 ,Fv = 1.942
Importance Factor, I=1.25

Period (sec)	Sa (g)
0.000	0.248
0.120	0.619
0.200	0.619
0.598	0.619
0.600	0.618
0.700	0.529
0.800	0.463
0.900	0.411
1.000	0.370
1.100	0.336
1.200	0.309
1.300	0.285
1.400	0.265
1.500	0.248
1.600	0.231
1.700	0.218
1.800	0.206
1.900	0.195



MCE DESIGN SPECTRUM (CHOWCHILLA)

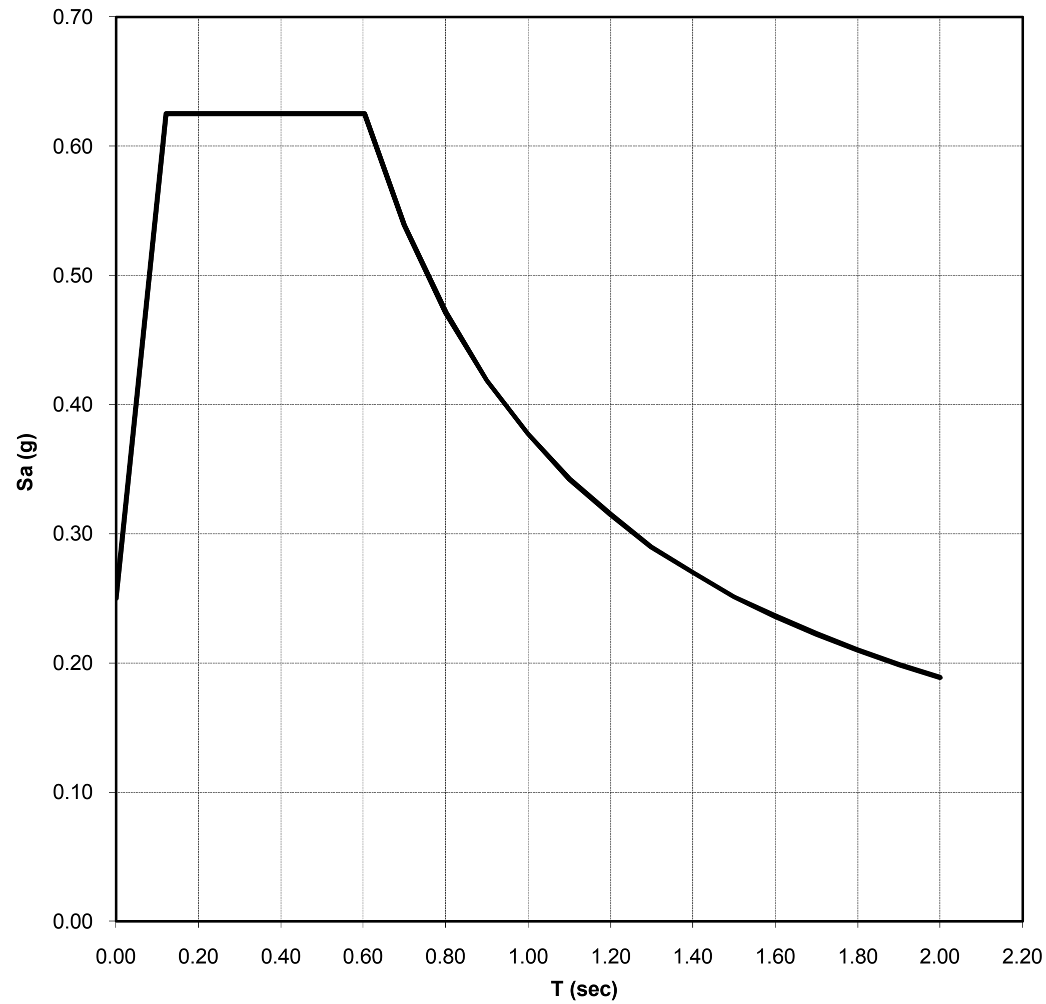
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

CALIFORNIA HIGH-SPEED TRAIN PROJECT
(MERCED-FRESNO SECTION)
MERCED-MADERA-FRESNO, CALIFORNIA

JOB NO.: 209138.10 | **PLATE NO.: 5C**

Conterminous 48 States
2005 ASCE 7 STANDARD
Latitude = 37.29573
Longitude = -120.47280
Design Response Spectra for Site Class Site Class D
SDs = 2/3 x SMs and SD1 = 2/3 x SM1
Site Class D - Fa = 1.358 ,Fv = 1.931
Importance Factor, I=1.25

Period (sec)	Sa (g)
0.000	0.250
0.121	0.625
0.200	0.625
0.603	0.625
0.700	0.539
0.800	0.471
0.900	0.419
1.000	0.378
1.100	0.343
1.200	0.315
1.300	0.290
1.400	0.270
1.500	0.251
1.600	0.236
1.700	0.223
1.800	0.210
1.900	0.199
2.000	0.189



MCE DESIGN SPECTRUM (MERCED)

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

CALIFORNIA HIGH-SPEED TRAIN PROJECT
(MERCED-FRESNO SECTION)
MERCED-MADERA-FRESNO, CALIFORNIA

JOB NO.: 209138.10	PLATE NO.: 5D

APPENDIX A

Bridge and Reference Project List

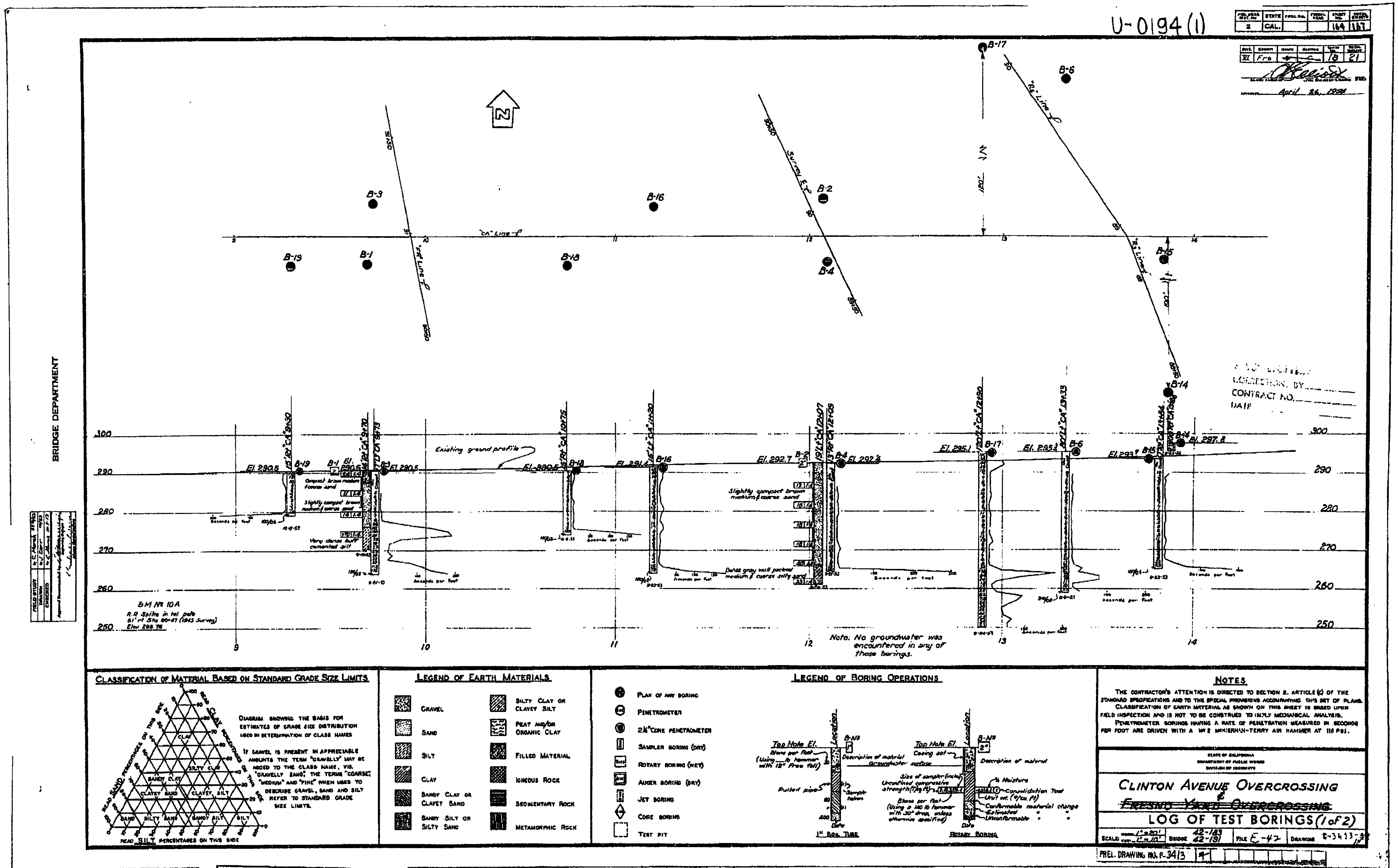
No	Bridge No	Structure Name	P.M	County	LOTB	Type of Foundation
1	42 0183	Clinton Avenue OC	_024.42	Fresno	Yes	
2	42 0191Y	Fresno Yard OC	_024.42	Fresno	Yes	
3	42 0148	SB 99 On-Ramp By Dakota	_026.22	Fresno	Yes	
4	42 0140	Ashlan Avenue OC	_026.55	Fresno	Yes	
5	42 0131L	Biola Junction	_027.31	Fresno	Yes	
6	42 0131R	Biola Junction	_027.31	Fresno	Yes	
7	42 0130	Shaw Avenue OC	_028.10	Fresno	Yes	
8	42 0129L	Herndon Canal	_028.40	Fresno	Yes	
9	42 0129R	Herndon Canal	_028.40	Fresno	Yes	
10	42 0127L	Grantland Avenue UC	_030.48	Fresno	Yes	
11	42 0127R	Grantland Avenue UC	_030.48	Fresno	Yes	
12	42 0126K	Herndon Canal	_030.99	Fresno	Yes	
13	42 0126K	Herndon Canal	_030.99	Fresno	Yes	
14	41 0008	San Joaquin River	_000.08	Madera	Yes	
15	41 0064	Avenue 7 OC	R000.99	Madera	Yes	
16	41 0060	Avenue 8 OC	_002.23	Madera	Yes	
17	41 0063	Avenue 9 OC	R003.56	Madera	Yes	
18	41 0035	Little Dry Creek	_005.88	Madera	No	
19	41 0061	Avenue 11 OC	_006.15	Madera	Yes	
20	41 0065L	Cottonwood Creek	R007.28	Madera	Yes	
21	41 0065R	Cottonwood Creek	R007.28	Madera	Yes	
22	41 0065S	Cottonwood Creek	R007.28	Madera	No	
23	41 0066	Avenue 12 OC	R007.46	Madera	Yes	
24	41 0062	Avenue 13 OC	_008.72	Madera	No	
25	41 0046K	South Madera OC	_009.74	Madera	Yes	
26	41 0046K	South Madera OC	_009.74	Madera	Yes	
27	41 0047	Route 145/99 Separation	_010.27	Madera	Yes	
28	41 0048	West sixth Street OC	_010.76	Madera	No	
29	41 0049	West Yosemite Avenue	_010.84	Madera	Yes	
30	41 0050	West Fourth Street OC	_011.01	Madera	Yes	
31	41 0051	Madera UP	_011.09	Madera	Yes	
32	41 0052	Fresno River	_011.65	Madera	Yes	
33	T0603900177	GEO TRACKER ID	_11.80	Madera	Yes	
34	41 0053	Cleveland Avenue OC	_012.13	Madera	Yes	
35	41 0058	Avenue 16 OC	_012.75	Madera	Yes	
36	41 0068	Avenue 17 OC	R014.22	Madera	Yes	
37	41 0072	Schmidt Creek	R014.60	Madera	No	
38	41 0005L	Dry Creek	R016.10	Madera	Yes	
39	41 0005R	Dry Creek	R016.10	Madera	Yes	
40	41 0069	Avenue 18 1/2 OC	R016.33	Madera	Yes	
41	41 0004	Beranda Creek	_017.85	Madera	Yes	
42	41 0043G	N99-W152 Connector Sep	_022.73	Madera	Yes	
43	41 0043G	N99-W152 Connector Sep	_022.73	Madera	Yes	
44	41 0014L	California OH	_023.09	Madera	Yes	
45	41 0014R	California UP	_023.09	Madera	Yes	

Bridge and Reference Project List

No	Bridge No	Structure Name	P.M	County	LOTB	Type of Foundation
46	41 0054	Avenue 24 OC	_023.77	Madera	Yes	
47	41 0044L	Beranda Slough	_024.78	Madera	Yes	
48	41 0044R	Beranda Slough	_024.78	Madera	Yes	
49	SL0603935695	GEO TRACKER ID	_26.40	Madera	Yes	
50	41 0055E	N99 & 233 Connector	_026.58	Madera	Yes	
51	41 0045L	Ash Slough	_026.80	Madera	Yes	
52	41 0045R	Ash Slough	_026.80	Madera	Yes	
53	41 0057	Le Grand Avenue OC	_028.17	Madera	Yes	
54	41 0001	Chowchilla River	_029.33	Madera	Yes	
55	39 0108L	South Dutchman Creek	_001.65	Merced	Yes	
56	39 0108R	South Dutchman Creek	_001.65	Merced	Yes	
57	39 0001L	Dutchman Creek	_002.62	Merced	Yes	
58	39 0001R	Dutchman Creek	_002.62	Merced	Yes	
59	39 0002L	Deadmans Creek	_005.22	Merced	Yes	
60	39 0002R	Deadmans Creek	_005.22	Merced	Yes	
61	39 0081	Mariposa Creek	_009.35	Merced	Yes	
62	39 0004	Duck Slough	_009.43	Merced	Yes	
63	39 0005	Duck Slough Overflow	_009.86	Merced	Yes	
64	39 0006	Owens Creek	_010.55	Merced	Yes	
65	39 0006L	Owens Creek	_010.55	Merced	Yes	
66	39 0006R	Owens Creek	_010.55	Merced	Yes	
67	39 0007	Miles Creek	_010.83	Merced	Yes	
68	39 0007L	Miles Creek	_010.83	Merced	Yes	
69	39 0057	Miles Creek Overflow	_010.98	Merced	Yes	
70	39 0057L	Miles Creek Overflow	_010.98	Merced	Yes	
71	39 0229L	Miles Creek Overflow	_011.41	Merced	Yes	
72	39 0229R	Miles Creek Overflow	_011.41	Merced	Yes	
73	39 0249R/L	CAMPUS PARKWAY OH	_012.50	Merced	Yes	
74	39 0143	Childs Avenue OC	_013.09	Merced	Yes	
75	T0604713690	GEO TRACKER ID	_13.20	Merced	Yes	
76	39 0140L	Route 99/140 Separation	_013.86	Merced	Yes	
77	39 0140R	Route 99/140 Separation	_013.86	Merced	Yes	
78	39 0141S	Yosemite Parkway ON-RA	_013.90	Merced	Yes	
79	39 0130L	East Merced OH	_014.08	Merced	Yes	
80	39 0130R	East Merced OH	_014.08	Merced	Yes	
81	39 0139L	15th Street UC	_014.22	Merced	Yes	
82	39 0139R	15th Street UC	_014.22	Merced	Yes	
83	39 0142L	G Street UC	_014.42	Merced	Yes	
84	39 0142R	G Street UC	_014.42	Merced	Yes	
85	39 0136L	Route 99/59 Separation	_014.67	Merced	Yes	
86	39 0136R	Route 99/59 Separation	_014.77	Merced	Yes	
87	39 0133L	L Street UC	_014.87	Merced	Yes	
88	39 0133R	L Street UC	_014.87	Merced	Yes	
89	39 0134L	M Street UC	_014.96	Merced	Yes	
90	39 0134R	M Street UC	_014.96	Merced	Yes	

Bridge and Reference Project List

No	Bridge No	Structure Name	P.M	County	LOTB	Type of Foundation
91	39 0135L	O Street UC	_015.15	Merced	Yes	
92	39 0135R	O Street UC	_015.15	Merced	Yes	
93	39 0137L	R Street UC	_015.42	Merced	Yes	
94	39 0137R	R Street UC	_015.42	Merced	Yes	
95		HWY99/APPLEGATE INTERCHANGE	_15.60	Merced	Yes	
96	39 0138L	Route 99/140 Separation	_015.78	Merced	Yes	
97	39 0138R	Route 99/140 Separation	_015.78	Merced	Yes	
98	39 0132R	Bear Creek	_016.38	Merced	Yes	
99	39 132R/L	Bear Creek	_016.38	Merced	Yes	
100	39 0131L	West Merced Overhead	_016.54	Merced	Yes	
101	39 0131R	West Merced Overhead	_016.54	Merced	Yes	
102	39 0010L	Black Rascal Canal	_017.30	Merced	Yes	
103	39 0010R	Black Rascal Canal	_017.30	Merced	Yes	
104	39 0084	Franklin Road OC	_018.51	Merced	Yes	
105	39 0116L	Ashe Drain	_018.59	Merced	No	
106	39 0116R	Ashe Drain	_018.59	Merced	No	
107	39 0018L	Webber Canal	_019.49	Merced	No	
108	39 0018R	Webber Canal	_019.49	Merced	No	
109	39 0013L	Canal Creek	_020.07	Merced	No	
110	39 0013R	Canal Creek	_020.07	Merced	No	



AS BUILT PLANS
Contract No. 55-6TC4
Date Completed
Document No. 60000992

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF TRANSPORTATION.
1-30-80 Joseph M. Cote
SUPERVISOR OF MICROFILM SERVICES

2	CAL.			35	

To Accompany Plans Dated 3-11-91

DIST	COUNTY	ROUTE	SECTION	SHEET No.	TOTAL SHEETS
				19	22

October 11, 1959

DIST.	COUNTY	ROUTE	POST MILES - TOTAL PROJECT	Sheet No.	Total Sheets
06	Fre	99	24.4, 26.6	143	199

ENGINEERING GEOLOGY BRANCH - TRANSPORTATION MATERIALS & RESEARCH

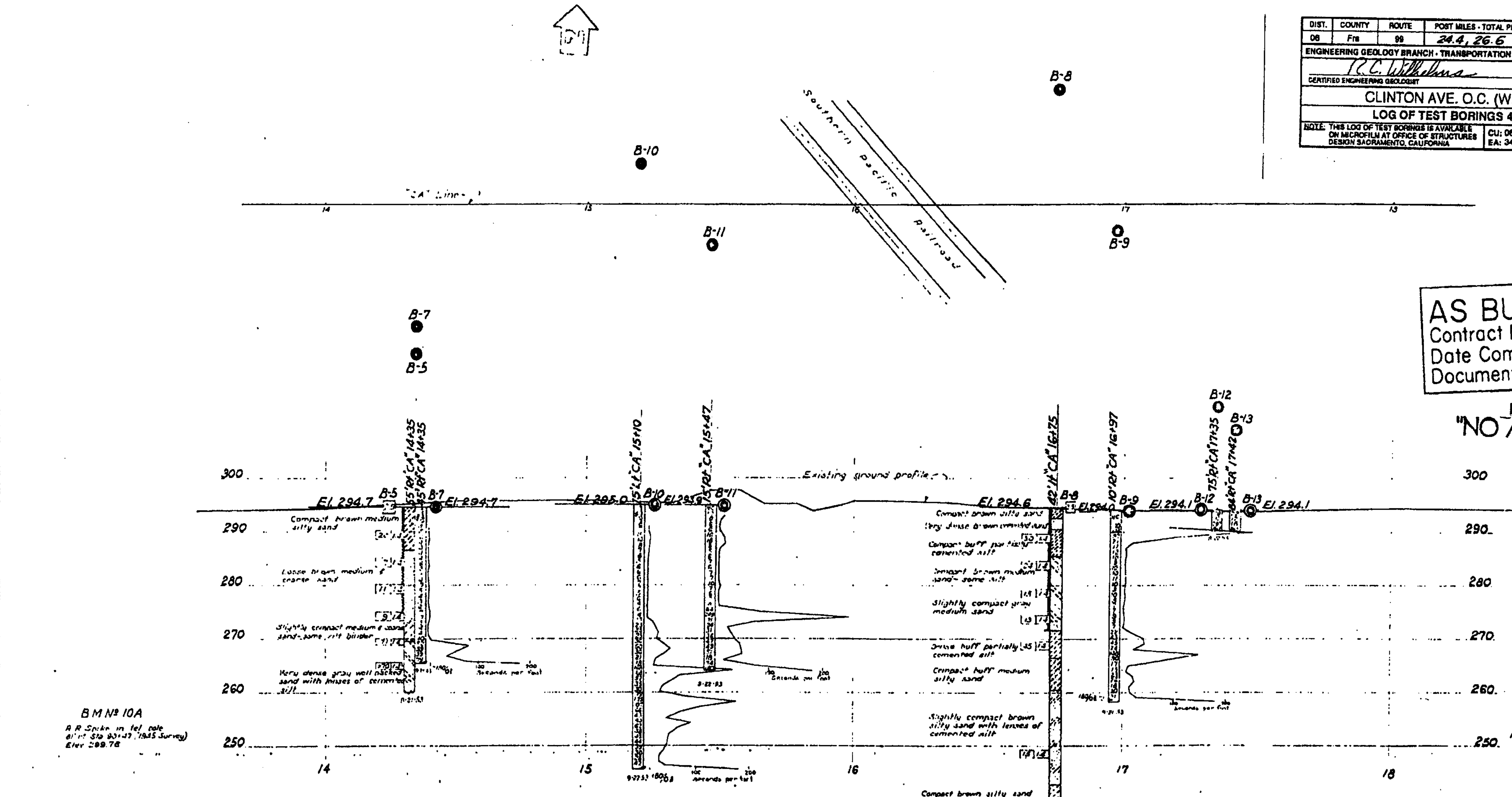
R.C. Wilhelms
CERTIFIED ENGINEERING GEOLOGIST

CLINTON AVE. O.C. (WIDEN)

LOG OF TEST BORINGS 4 OF 4

NOTE: THIS LOG OF TEST BORINGS IS AVAILABLE ON MICROFILM AT OFFICE OF STRUCTURES DESIGN SACRAMENTO, CALIFORNIA	CU: 06 EA: 342931	BRIDGE No. 42-183

REGISTERED GEOLOGIST
R.C. WILHELMS
No. 660
Exp. 6-30-92
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA



AS BUILT PLANS
Contract No. 55-14TC24
Date Completed
Document No. 60000991

"NO AS-BUILT CORRECTIONS"

AS BUILT

CORRECTIONS BY DAVID VALLEJOS

CONTRACT NO. 06-342934

DATE 4-16-93

VAH 6/6/94

Note: No groundwater was encountered in any of these borings.

AS BUILT

NO CORRECTIONS BY

DATE

Classification of Material Based on Standard Grade Size Limits

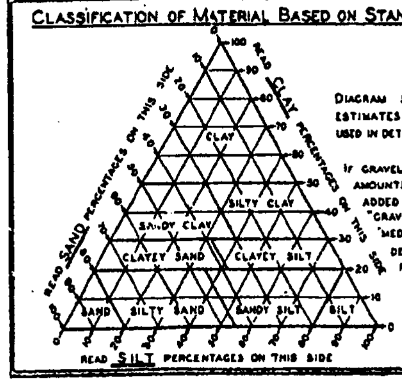


Diagram showing the basis for estimates of grade size distribution used in determination of class names

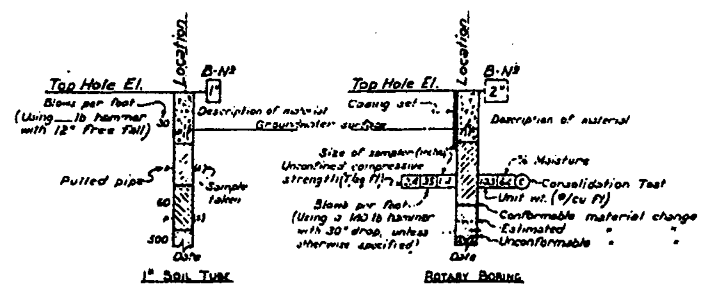
If gravel is present in appreciable amounts the term "gravelly" may be added to the class name, vis. "gravelly sand". The terms "coarse", "medium" and "fine" when used to describe gravel, sand and silt refer to standard grade size limits.

Legend of Earth Materials

- Gravel
- Sand
- Silt
- Clay
- Sandy Clay or Clayey Sand
- Sandy Silt or Silty Sand
- Silty Clay or Clayey Silt
- Peat and/or Organic Clay
- Filled Material
- Igneous Rock
- Sedimentary Rock
- Metamorphic Rock

Legend of Boring Operations

- Plan of any boring
- Penetrometer
- 2½" Cone penetrometer
- Sampler boring (dry)
- Rotary boring (wet)
- Auger boring (dry)
- Jet boring
- Core boring
- Test pit



Notes

The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans.

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

Penetrometer borings having a rate of penetration measured in seconds per foot are driven with a No 2 McKiernan-Terry air hammer at 115 PSI.

State of California
Department of Public Works
Division of Highways

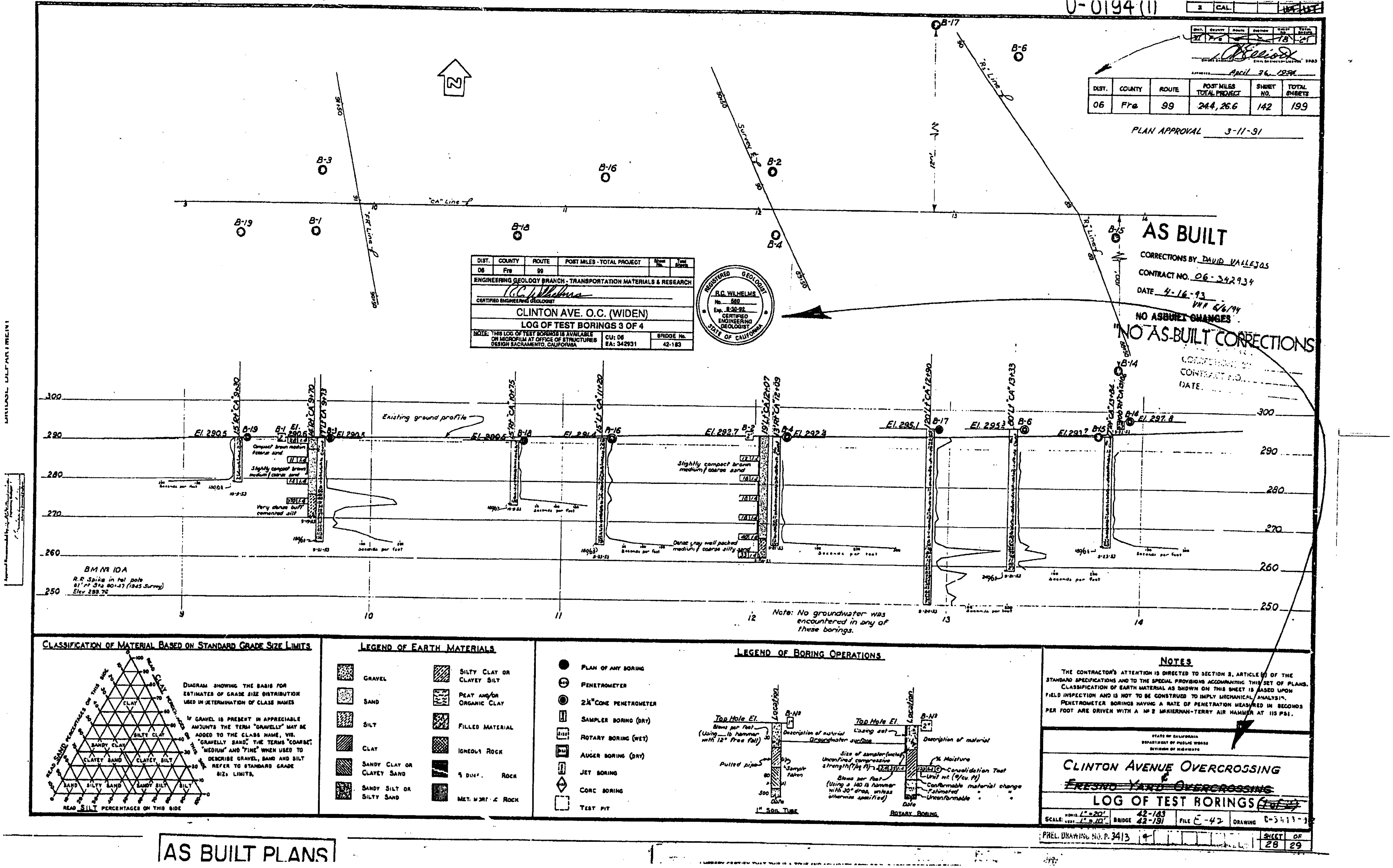
Clinton Avenue Overcrossing & Fresno Yard Overcrossing

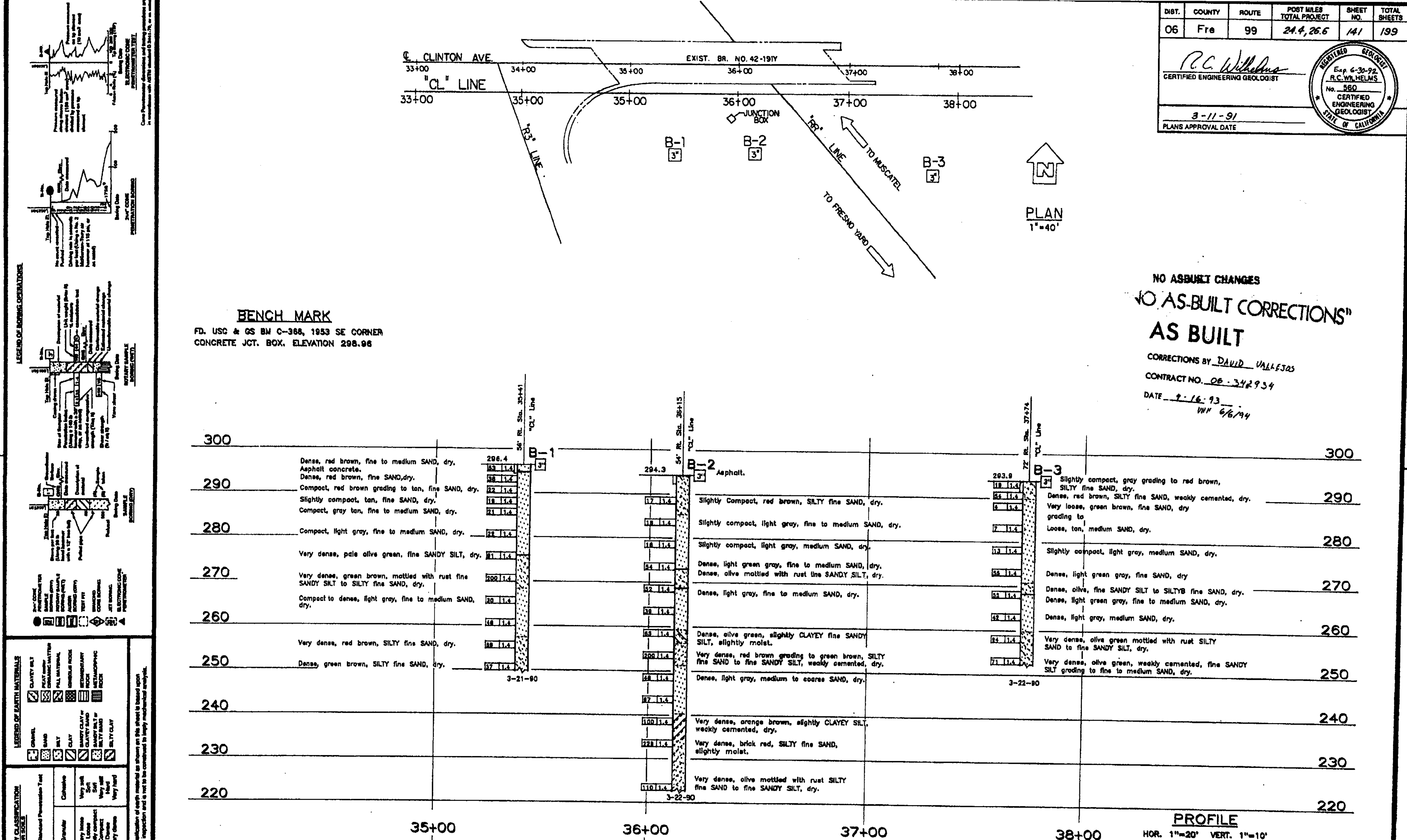
LOG OF TEST BORINGS (2 of 2)

Scale	Horiz 1" = 20' / Vert 1" = 10'	Bridge 42-183 / 42-191	File	Drawing

3412

SHEET	OF
29	29


U-0194 (1)
B-17
B-6
B-3
B-16
B-2
B-19
B-1
B-18
B-4
B-15
B-14
"CA" Line
"FR" Line
"RI" Line
Survey
PLAN APPROVAL 3-11-91
| DIST. | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 06 | Fre | 99 | 244, 26.6 | 142 | 199 |
April 26, 1991
AS BUILT
CORRECTIONS BY DAVID VALLEJOS
CONTRACT NO. 06-342934
DATE 4-16-93
NO ASBUILT CHANGES
"NO AS-BUILT CORRECTIONS"
DIST. COUNTY ROUTE POST MILES - TOTAL PROJECT
06 Fre 99
ENGINEERING GEOLOGY BRANCH - TRANSPORTATION MATERIALS & RESEARCH
CERTIFIED ENGINEERING GEOLOGIST
CLINTON AVE. O.C. (WIDEN)
LOG OF TEST BORINGS 3 OF 4
NOTE: THIS LOG OF TEST BORINGS IS AVAILABLE ON MICROFILM AT OFFICE OF STRUCTURES DESIGN SACRAMENTO, CALIFORNIA
CU: 06
EA: 342931
BRIDGE No. 42-183
REGISTERED GEOLOGIST
R.C. WILHELMS
No. 580
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA
Existing ground profile
El. 290.5
El. 290.6
El. 290.5
El. 290.5
El. 291.4
El. 292.7
El. 292.3
El. 295.1
El. 295.3
El. 293.7
El. 297.8
Compact brown medium / coarse sand
Slightly compact brown medium / coarse sand
Very dense buff cemented silt
Slightly compact brown medium / coarse sand
Dense gray well packed medium / coarse silty sand
Seconds per foot
BM No 10A
R.R. Spike in tel pole
61' Rt Sta 90+47 (1945 Survey)
Elev 289.79
Note: No groundwater was encountered in any of these borings.
300
290
280
270
260
250
9
10
11
12
13
14
CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS
DIAGRAM SHOWING THE BASIS FOR ESTIMATES OF GRADE SIZE DISTRIBUTION USED IN DETERMINATION OF CLASS NAMES
IF GRAVEL IS PRESENT IN APPRECIABLE AMOUNTS THE TERM "GRAVELLY" MAY BE ADDED TO THE CLASS NAME, VIZ. "GRAVELLY SAND". THE TERMS "COARSE", "MEDIUM" AND "FINE" WHEN USED TO DESCRIBE GRAVEL, SAND AND SILT REFER TO STANDARD GRADE SIZE LIMITS.
CLAY
SILTY CLAY
SANDY CLAY
CLAYEY SAND
CLAYEY SILT
SAND
SILTY SAND
SANDY SILT
SILT
READ SILT PERCENTAGES ON THIS SIDE
LEGEND OF EARTH MATERIALS
GRAVEL
SAND
SILT
CLAY
SANDY CLAY OR CLAYEY SAND
SANDY SILT OR SILTY SAND
SILTY CLAY OR CLAYEY SILT
PEAT AND/OR ORGANIC CLAY
FILLED MATERIAL
IGNEOUS ROCK
ROCK
LEGEND OF BORING OPERATIONS
PLAN OF ANY BORING
PENETROMETER
2½" CONE PENETROMETER
SAMPLER BORING (DRY)
ROTARY BORING (WET)
AUGER BORING (DRY)
JET BORING
CORE BORING
TEST PIT
Top Hole El.
Blows per foot (Using __ lb hammer with 12" free fall)
Description of material
Groundwater surface
Pulled pipe
Sample taken
Location
Date
1" SOIL TUBE
Casing set
Size of sampler (inches)
Unconfined compressive strength (T/sq ft)
Blows per foot (Using a 140 lb hammer with 30" drop, unless otherwise specified)
% Moisture
Consolidation Test
Unit wt (#/cu. ft)
Conformable material change
Estimated
Unconformable
ROTARY BORING
NOTES
THE CONTRACTOR'S ATTENTION IS DIRECTED TO SECTION 2, ARTICLE (b) OF THE STANDARD SPECIFICATIONS AND TO THE SPECIAL PROVISIONS ACCOMPANYING THIS SET OF PLANS. CLASSIFICATION OF EARTH MATERIAL AS SHOWN ON THIS SHEET IS BASED UPON FIELD INSPECTION AND IS NOT TO BE CONSTRUED TO IMPLY MECHANICAL ANALYSIS. PENETROMETER BORINGS HAVING A RATE OF PENETRATION MEASURED IN SECONDS PER FOOT ARE DRIVEN WITH A No 2 McKIERNAN-TERRY AIR HAMMER AT 115 PSI.
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS
CLINTON AVENUE OVERCROSSING
~~FRESNO YARD OVERCROSSING~~
LOG OF TEST BORINGS
SCALE: HORIZ. 1" = 20' VERT. 1" = 10'
BRIDGE 42-183 42-191
FILE E-42
PREL. DRAWING No. P. 3413
SHEET 28 OF 29
AS BUILT PLANS



DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Fre	99	24.4, 26.6	141	199

R.C. Wilhelms
CERTIFIED ENGINEERING GEOLOGIST

REGISTERED GEOLOGIST · Exp. 6-30-92 · R.C. WILHELMS · No. 560 · CERTIFIED ENGINEERING GEOLOGIST · STATE OF CALIFORNIA

3-11-91
PLANS APPROVAL DATE

ENGINEERING GEOLOGY BRANCH - TRANSPORTATION LABORATORY

DRAWN BY LEONY L. LOPEZ 4/90
CHECKED BY

PROJECT ENGINEER

State of CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES
STRUCTURE DESIGN 2

BRIDGE NO. 42-183
POST MILE 24.4

CLINTON AVE. O.C. (WIDEN)
LOG OF TEST BORINGS 2 OF 4

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 06
EA 342931

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 27 OF 29

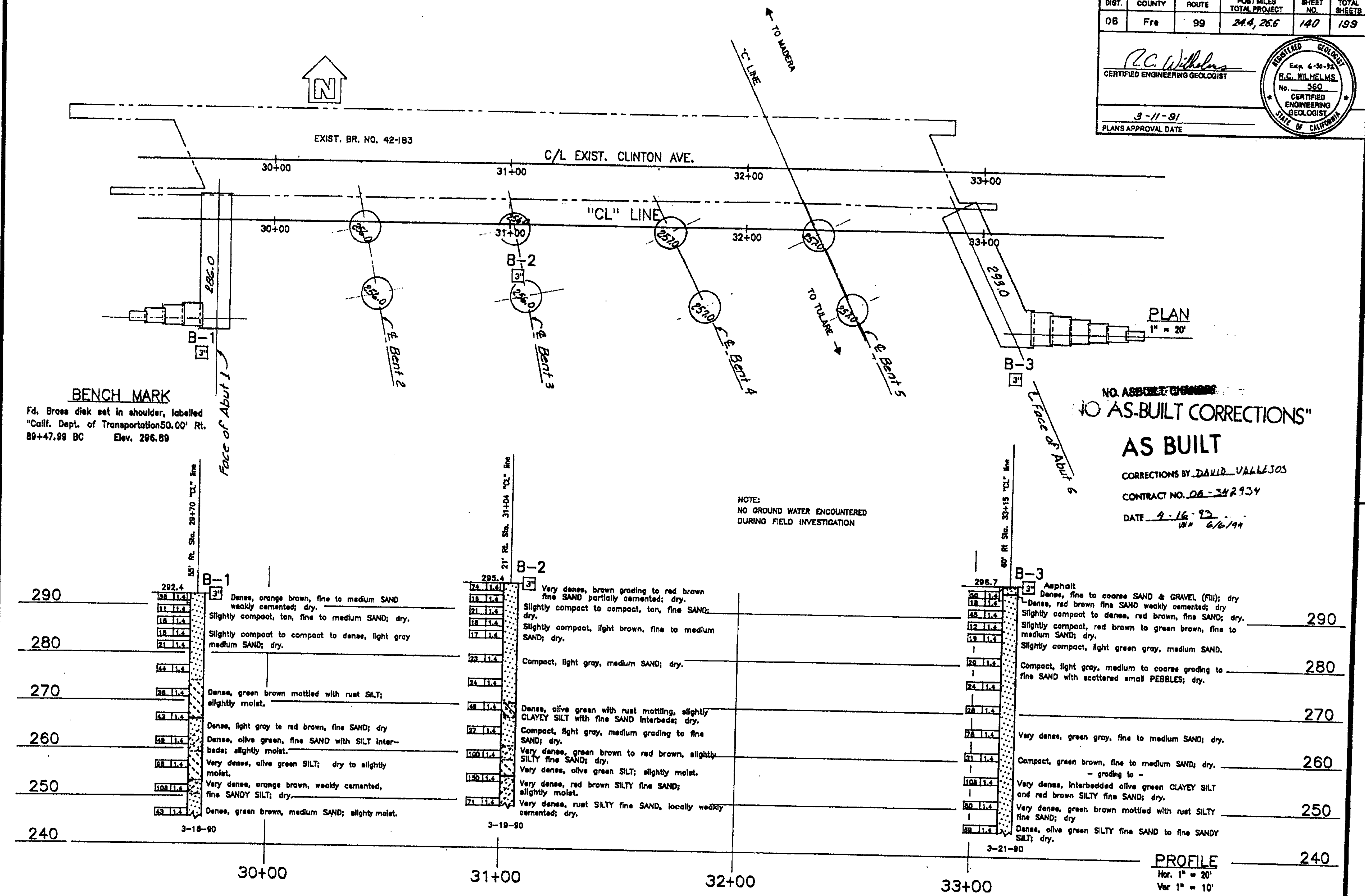
TL 0651 REV. 4/86

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Fre	99	24.4, 26.6	140	199

R.C. Wilhelms
CERTIFIED ENGINEERING GEOLOGIST

3-11-91
PLANS APPROVAL DATE

REGISTERED GEOLOGIST · Exp. 6-30-92 · R.C. WILHELMS · No. 560 · CERTIFIED ENGINEERING GEOLOGIST · STATE OF CALIFORNIA



ENGINEERING GEOLOGY BRANCH - TRANSPORTATION LABORATORY

DRAWN BY IRMA GAMARRA 5/90

CHECKED BY

John Fujimoto, PROJECT ENGINEER

State of CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES
STRUCTURE DESIGN 2

BRIDGE NO. 42-183
POST MILE 24.4

CLINTON AVE. O.C. (WIDEN)
LOG OF TEST BORINGS 1 OF 4

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 06
EA 342931

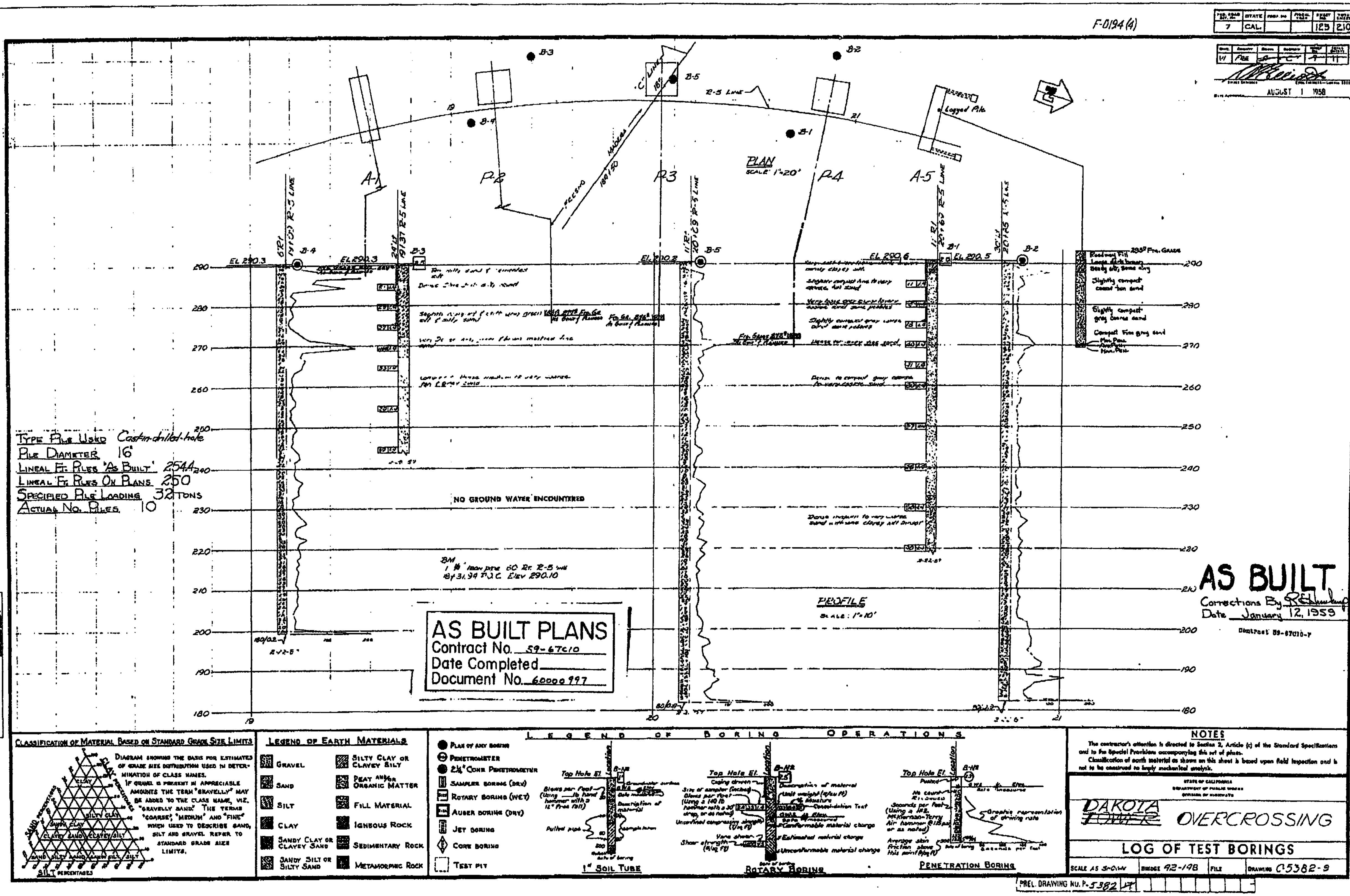
DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 26 OF 29

TL 6081 REV. 4/89

F-0194(4)

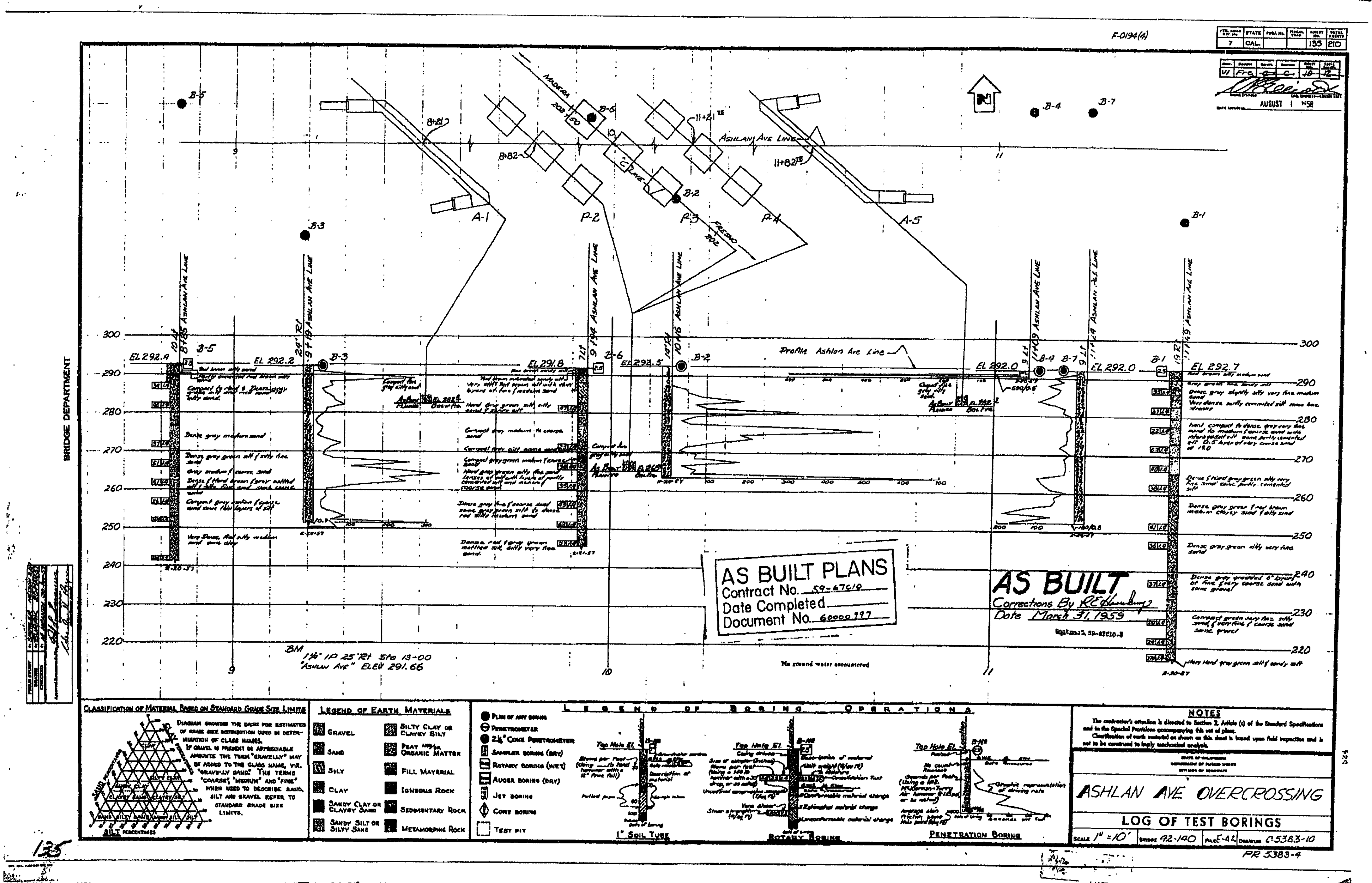


BRIDGE DEPARTMENT

123

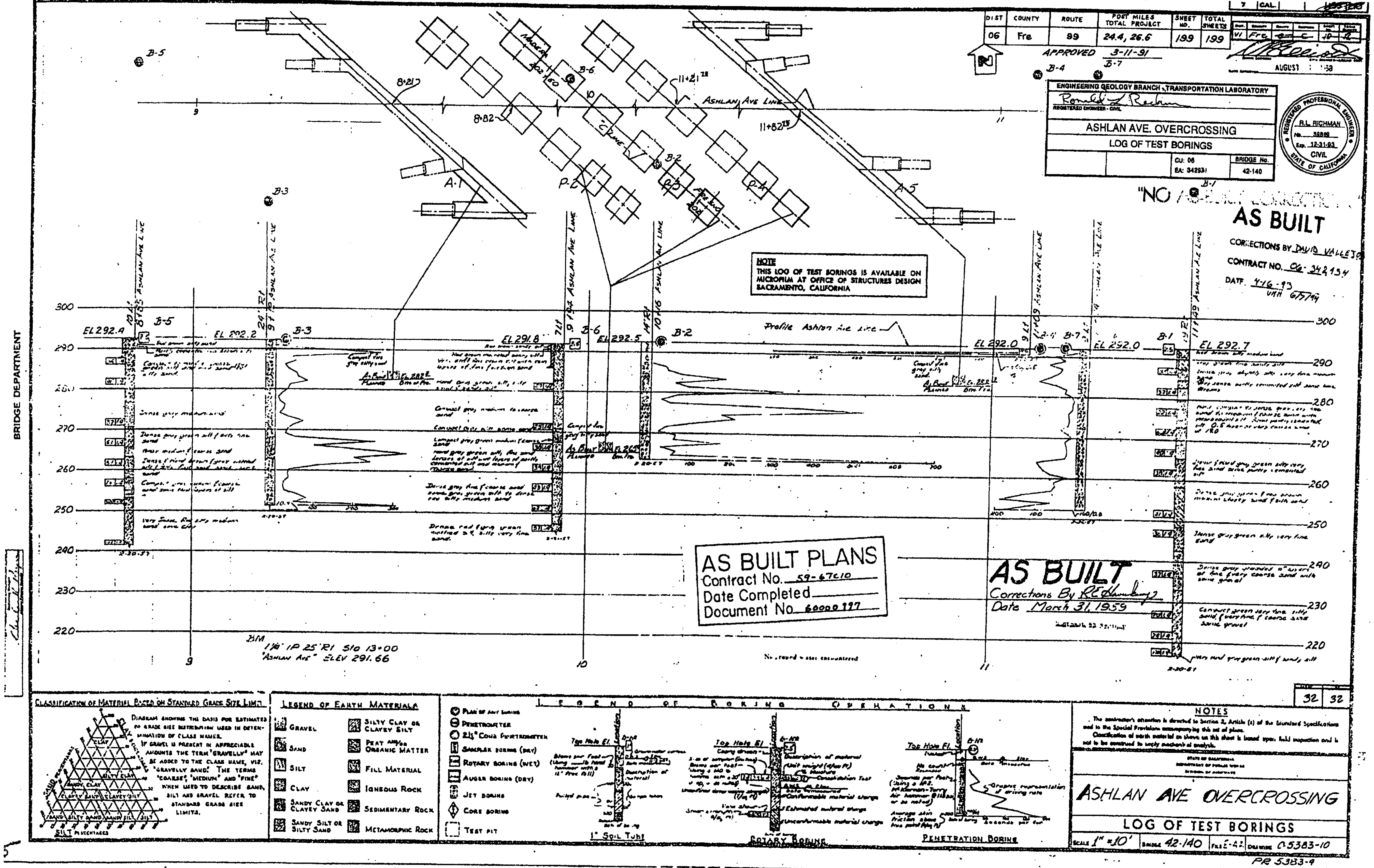
I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE 9/16/71 SIGNATURE TITLE N.A.C. II

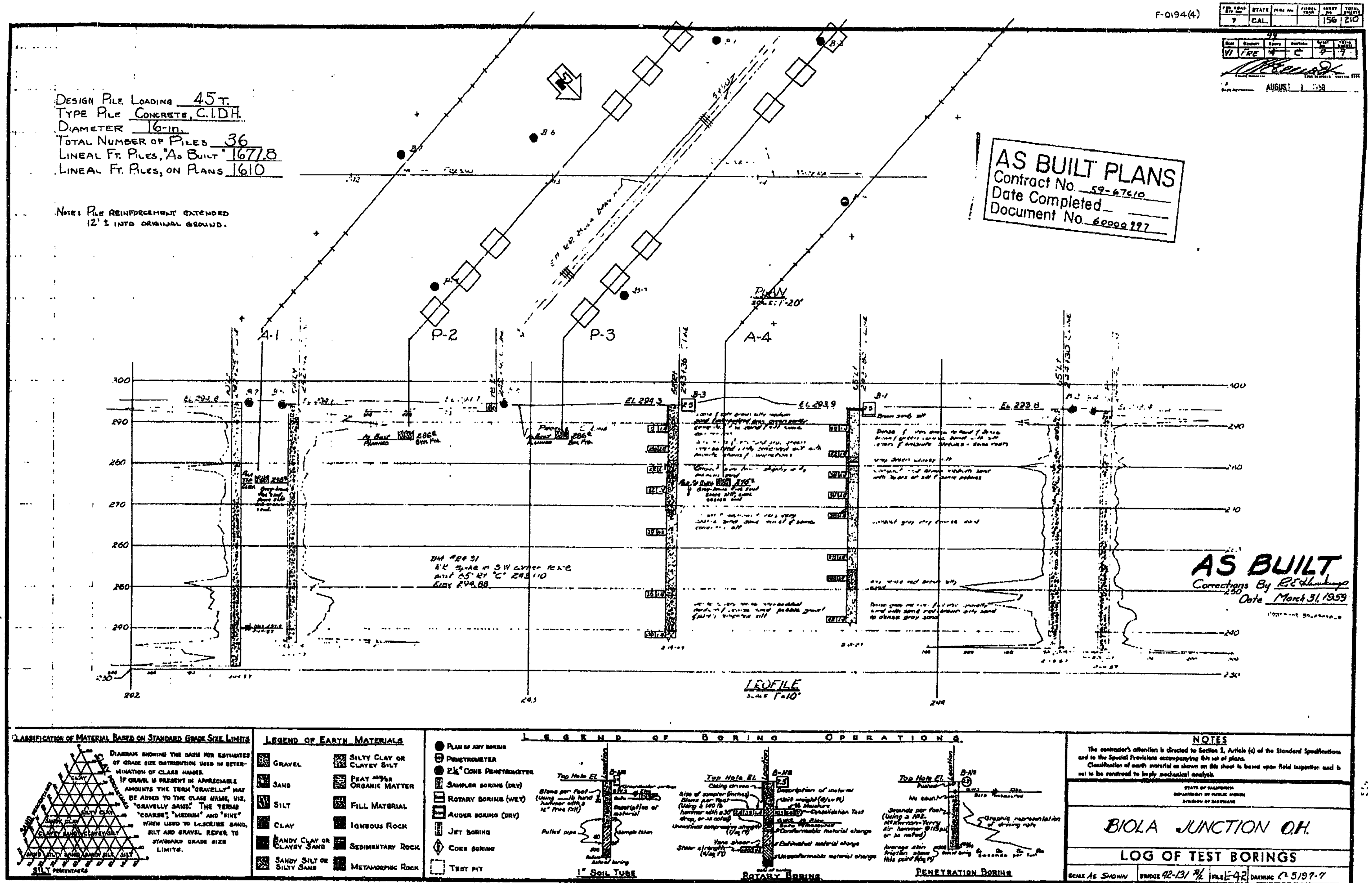


I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE 7/16/71 SIGNATURE [signature] TITLE HAC II

DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS
06 | Fre | 99 | 24.4, 26.6 | 199 | 199
APPROVED 3-11-91
ENGINEERING GEOLOGY BRANCH, TRANSPORTATION LABORATORY
REGISTERED ENGINEER - CIVIL
ASHLAN AVE. OVERCROSSING
LOG OF TEST BORINGS
CU: 06
EA: 342931
BRIDGE No.
42-140
R.L. RICHMAN
No. 36869
Exp. 12-31-93
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA
AS BUILT
CORRECTIONS BY DAVID VALLEJO
CONTRACT NO. 06-342134
DATE 4-16-93
NOTE
THIS LOG OF TEST BORINGS IS AVAILABLE ON MICROFILM AT OFFICE OF STRUCTURES DESIGN SACRAMENTO, CALIFORNIA
ASHLAN AVE LINE
Profile Ashlan Ave Line
B-1
B-2
B-3
B-4
B-5
B-6
B-7
A-1
P-2
P-4
A-5
EL 292.4
EL 292.2
EL 291.8
EL 292.5
EL 292.0
EL 292.0
EL 292.7
AS BUILT PLANS
Contract No. 59-67C10
Date Completed
Document No. 60000197
AS BUILT
Corrections By
Date March 31, 1959
BM
1½" IP 25' Rt Sta 13+00
"Ashlan Ave" ELEV 291.66
BRIDGE DEPARTMENT
CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS
LEGEND OF EARTH MATERIALS
Gravel
Sand
Silt
Clay
Sandy Clay or Clayey Sand
Sandy Silt or Silty Sand
Silty Clay or Clayey Silt
Peat and/or Organic Matter
Fill Material
Igneous Rock
Sedimentary Rock
Metamorphic Rock
LEGEND OF BORING OPERATIONS
Penetrometer
Sampler boring (dry)
Rotary boring (wet)
Auger boring (dry)
Jet boring
Core boring
Test pit
1" Soil Tube
Rotary Boring
Penetration Boring
NOTES
ASHLAN AVE OVERCROSSING
LOG OF TEST BORINGS
SCALE 1" = 10'
BRIDGE 42-140
DRAWING C-5383-10
PR 5383-9
32
32

F-0194(4)

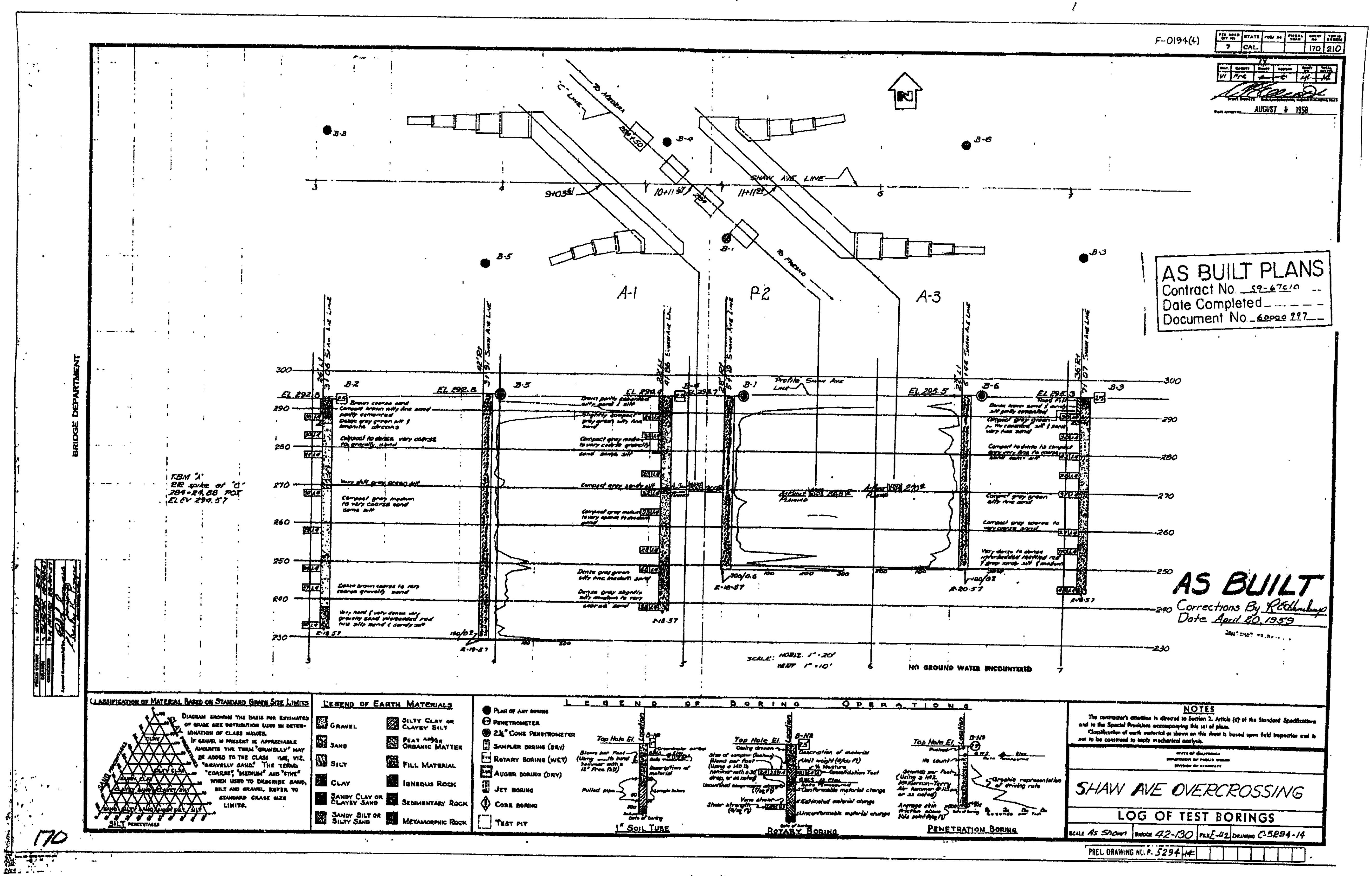


PREL. DRAWING No. P 5197 PR-5197-3

156

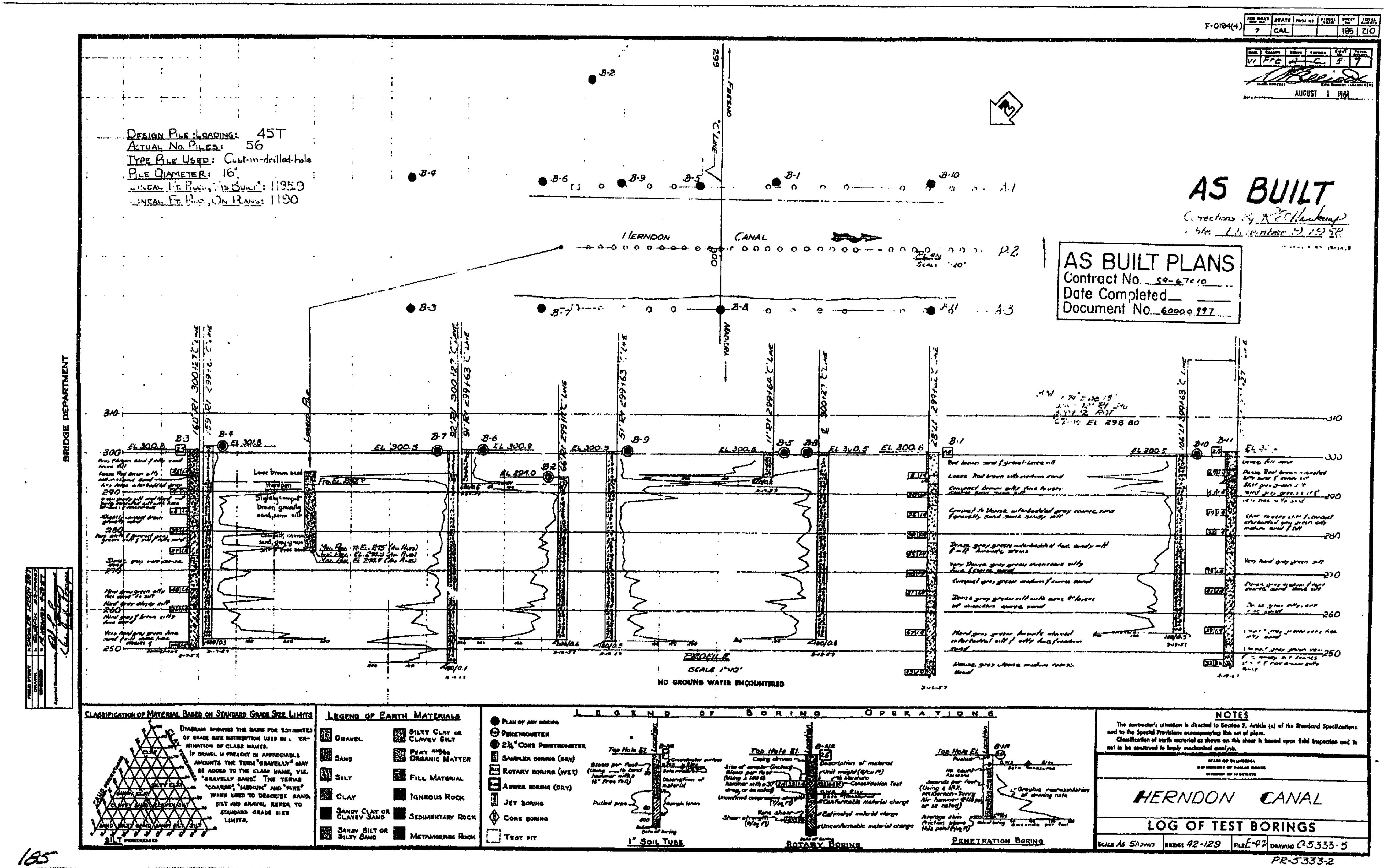
I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE ______ SIGNATURE ______ TITLE ______



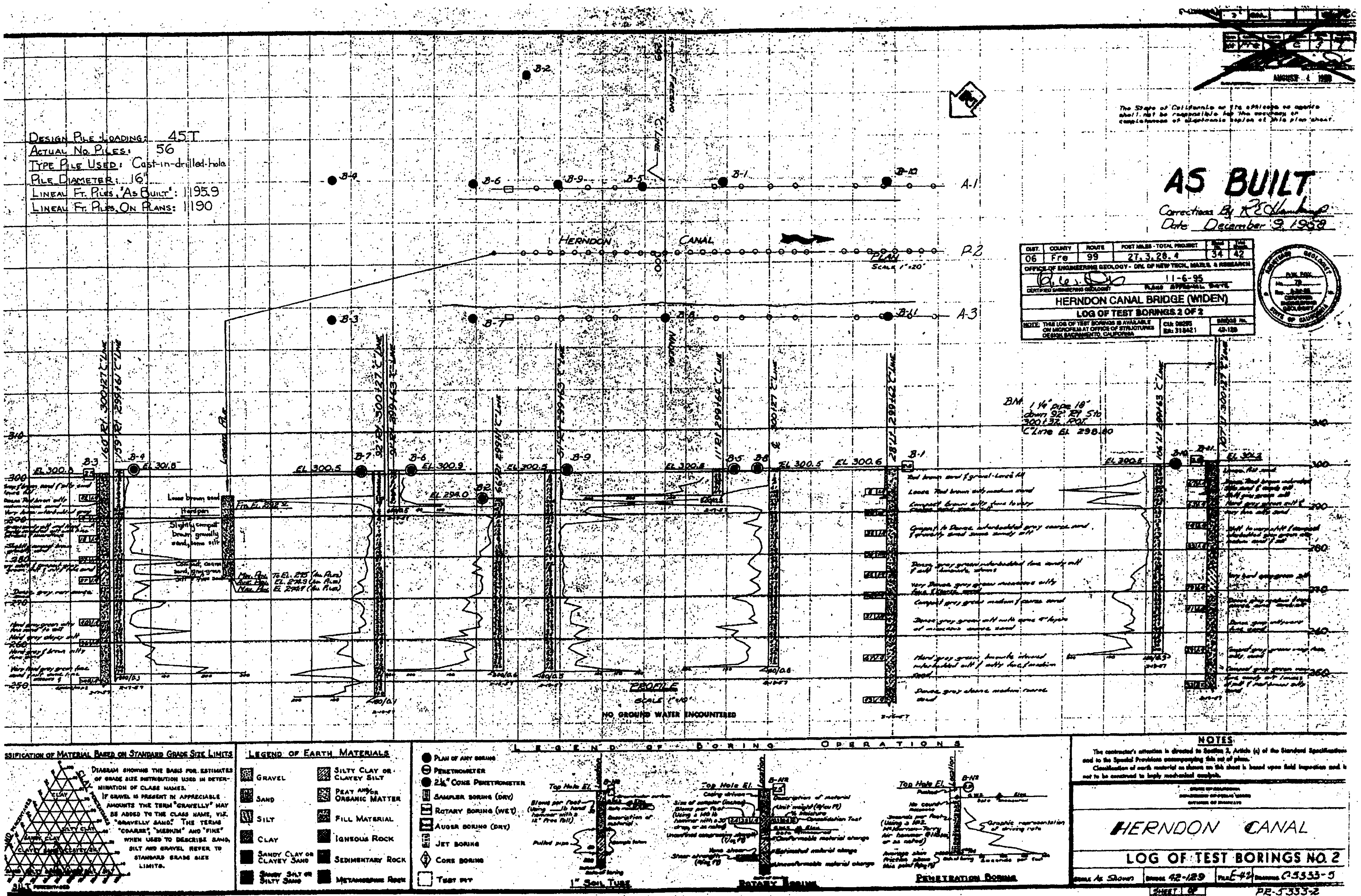
I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

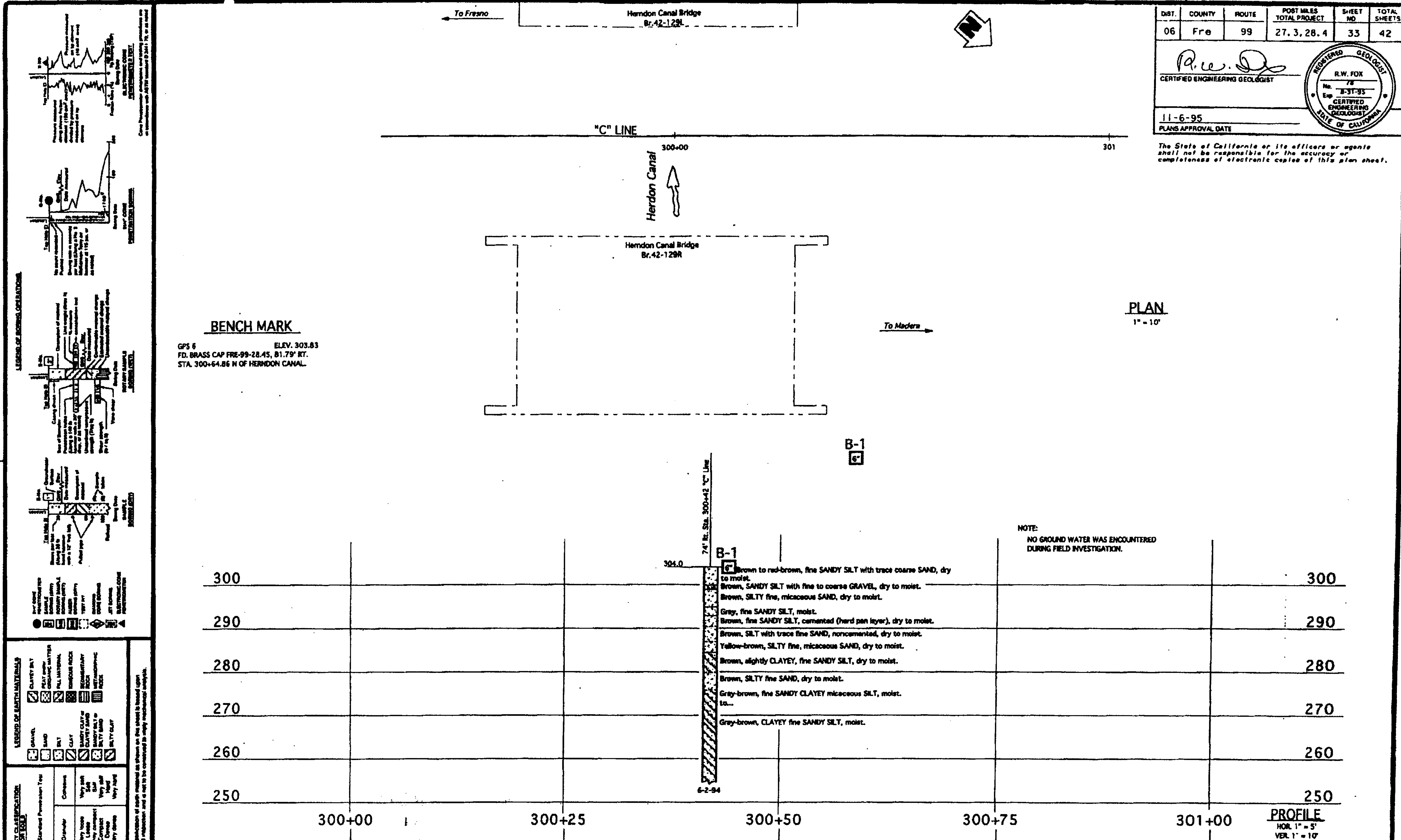
DATE ______ SIGNATURE ______ TITLE ______



I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE 9/1x/7x SIGNATURE ________ TITLE ________


AS BUILT
Corrections By R.E. [illegible]
Date December 9 1958
DESIGN PILE LOADING: 45T
ACTUAL NO. PILES: 56
TYPE PILE USED: Cast-in-drilled-hole
PILE DIAMETER: 16"
LINEAL FT. PILES "AS BUILT": 1195.9
LINEAL FT. PILES ON PLANS: 1190
HERNDON CANAL
PLAN
SCALE 1"=20'
A-1
P-2
A-3
B-1
B-2
B-3
B-4
B-5
B-6
B-7
B-8
B-9
B-10
B-11
PROFILE
NO GROUND WATER ENCOUNTERED
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.
DIST. 06
COUNTY Fre
ROUTE 99
POST MILES - TOTAL PROJECT 27.3, 28.4
SHEET 34
TOTAL SHEETS 42
OFFICE OF ENGINEERING GEOLOGY - DIV. OF NEW TECH, MATLS, & RESEARCH
11-6-95
CERTIFIED ENGINEERING GEOLOGIST
HERNDON CANAL BRIDGE (WIDEN)
LOG OF TEST BORINGS 2 OF 2
NOTE: THIS LOG OF TEST BORINGS IS AVAILABLE ON MICROFILM AT OFFICE OF STRUCTURES DESIGN, SACRAMENTO, CALIFORNIA
BRIDGE No. 42-129
CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS
LEGEND OF EARTH MATERIALS
GRAVEL
SAND
SILT
CLAY
SANDY CLAY OR CLAYEY SAND
SANDY SILT OR SILTY SAND
SILTY CLAY OR CLAYEY SILT
PEAT AND/OR ORGANIC MATTER
FILL MATERIAL
IGNEOUS ROCK
SEDIMENTARY ROCK
METAMORPHIC ROCK
LEGEND OF BORING OPERATIONS
PLAN OF ANY BORING
PENETROMETER
2½" CONE PENETROMETER
SAMPLER BORING (DRY)
ROTARY BORING (WET)
AUGER BORING (DRY)
JET BORING
CORE BORING
TEST PIT
1" SOIL TUBE
ROTARY BORING
PENETRATION BORING
NOTES
HERNDON CANAL
LOG OF TEST BORINGS NO. 2
SCALE As Shown
BRIDGE 42-129
FILE E-42
DRAWING C5333-5
SHEET 14 OF 14
PR-5333-2



DIVISION OF NEW TECHNOLOGY, MATERIALS AND RESEARCH	OFFICE OF ENGINEERING GEOLOGY	FIELD INVESTIGATION BY: J. THORNE	State of CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES STRUCTURE DESIGN	BRIDGE NO. 42-129R / POST MILE 28.4
DRAWN BY 7/94					HERNDON CANAL BRIDGE (WIDEN)
CHECKED BY					LOG OF TEST BORINGS NO. 1

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 06255
EA 318421

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 13 OF 14

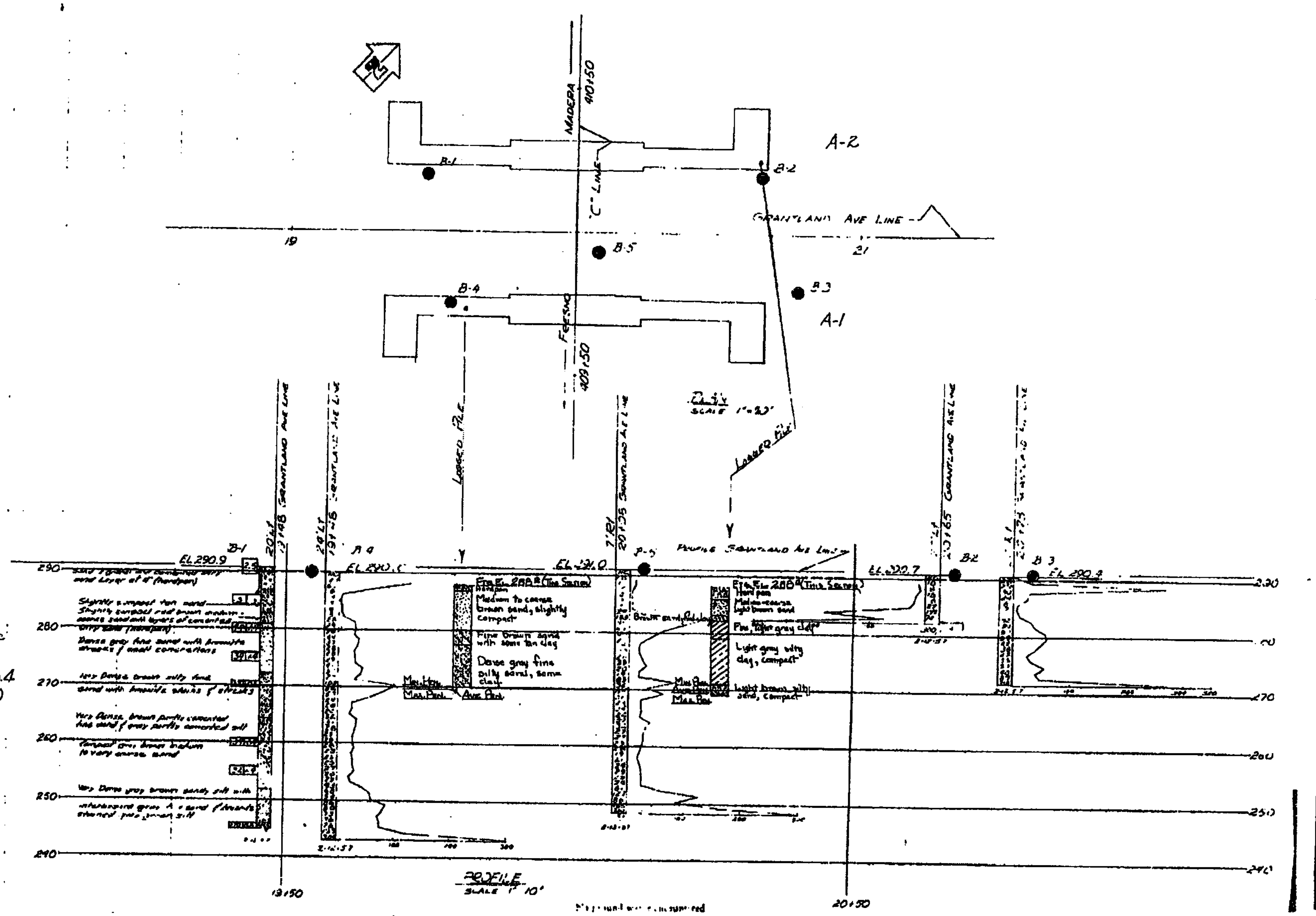
F-0194(4)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
7	CAL.			196	210

VI Fre 4 C 9 7

AUGUST 1 1958

BRIDGE DEPARTMENT



BM 40 50
CHISELED SQUARE IN NORTH END
EAST HEADWALL ON CULVERT 70' Lt "C"
405+02 ELEV 294.93

TYPE PILE USED: Cast-in-Drilled-Hole
PILE DIAMETER: 16"
LINEAL FT. PILES, 'AS BUILT': 2776.4
LINEAL FT. PILES, ON PLANS: 2720
SPECIFIED PILE LOADING: 45 T
ACTUAL NO. PILES: 142

AS BUILT

Corrections By S.E. Hamberg
Date December 8, 1958

AS BUILT PLANS
Contract No. 59-67C10
Date Completed
Document No. 60000997

CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

DIAGRAM SHOWING THE BASIS FOR ESTIMATES OF GRADE SIZE DISTRIBUTION USED IN DETERMINATION OF CLASS NAMES. IF GRAVEL IS PRESENT IN APPRECIABLE AMOUNTS THE TERM "GRAVELLY" MAY BE ADDED TO THE CLASS NAME, VIZ. "GRAVELLY SAND". THE TERMS "COARSE", "MEDIUM" AND "FINE" WHEN USED TO DESCRIBE SAND, SILT AND GRAVEL REFER TO STANDARD GRADE SIZE LIMITS.

LEGEND OF EARTH MATERIALS

Gravel · Sand · Silt · Clay · Sandy Clay or Clayey Sand · Sandy Silt or Silty Sand · Silty Clay or Clayey Silt · Peat and/or Organic Matter · Fill Material · Igneous Rock · Sedimentary Rock · Metamorphic Rock

LEGEND OF BORING OPERATIONS

Plan of any boring · Penetrometer · 2½" Cone Penetrometer · Sampler boring (dry) · Rotary boring (wet) · Auger boring (dry) · Jet boring · Core boring · Test pit

1" SOIL TUBE · ROTARY BORING · PENETRATION BORING

NOTES

The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans.

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

GRANTLAND AVE UC

LOG OF TEST BORINGS

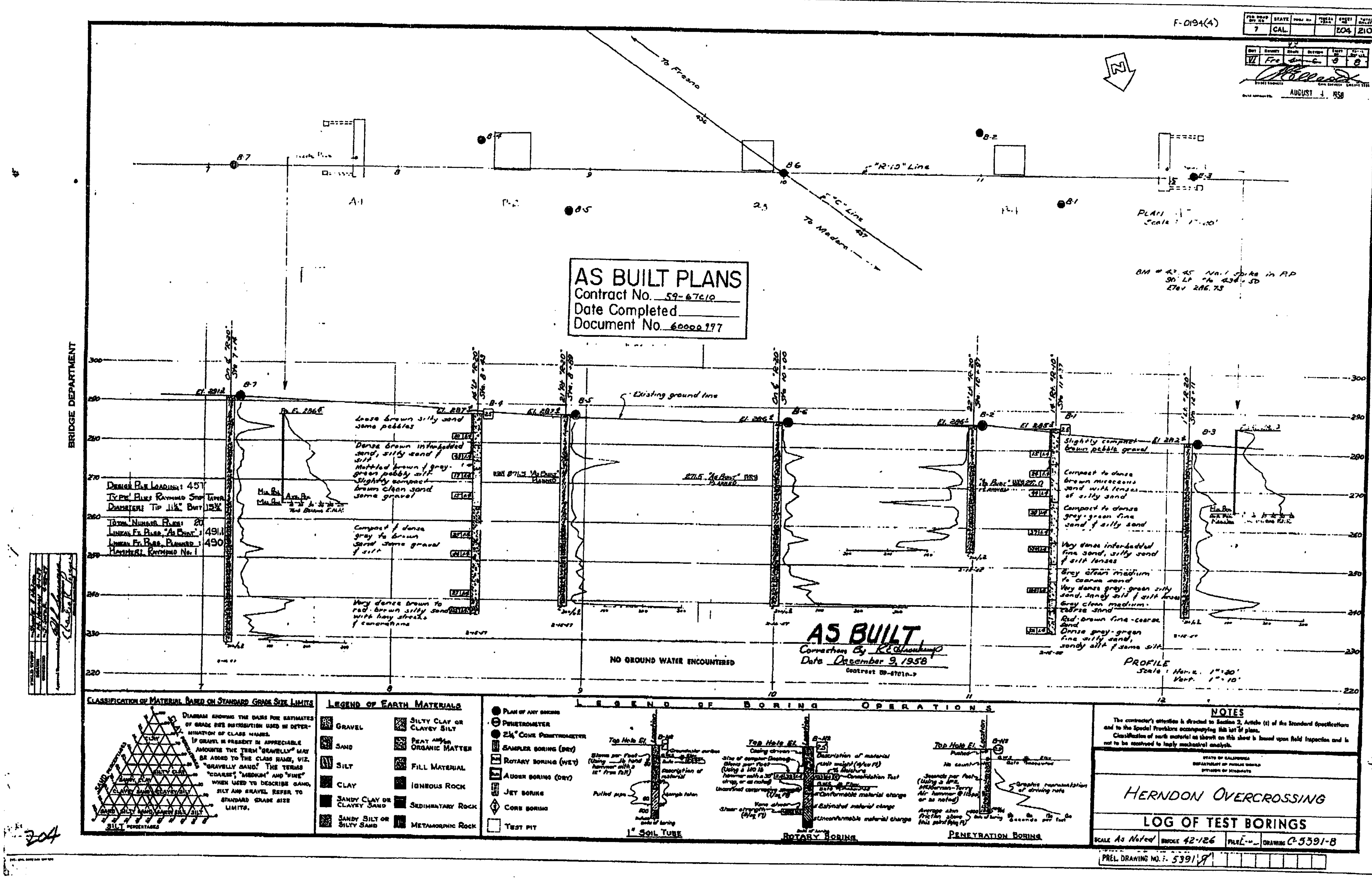
SCALE As Shown | BRIDGE 42-127 R/L | FILE E-42 | DRAWING C-5340-9

PR-5340-3

196

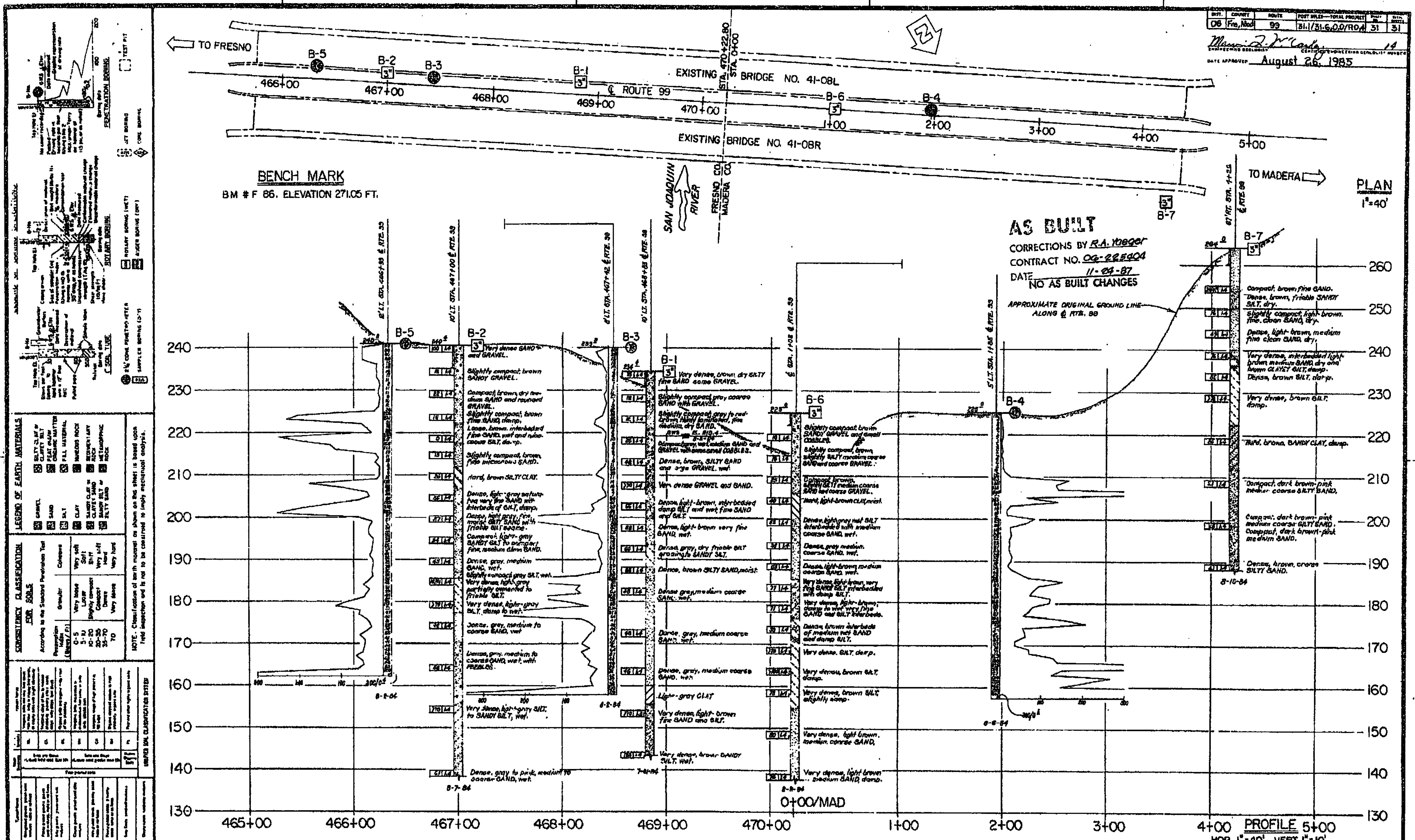
I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE 9/16/71 SIGNATURE [illegible] TITLE JAC II



I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE 9/1/14 SIGNATURE ______ TITLE ______



GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY

DRAWN BY LEORY L. LOPEZ 8/84

CHECKED BY R. Hager

A F GOLDSCHMIDT 271

State of CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURES - DESIGN

BRIDGE NO. 41-08

POST MILE 0.0

SAN JOAQUIN RIVER BRIDGE (WIDEN)

LOG OF TEST BORINGS

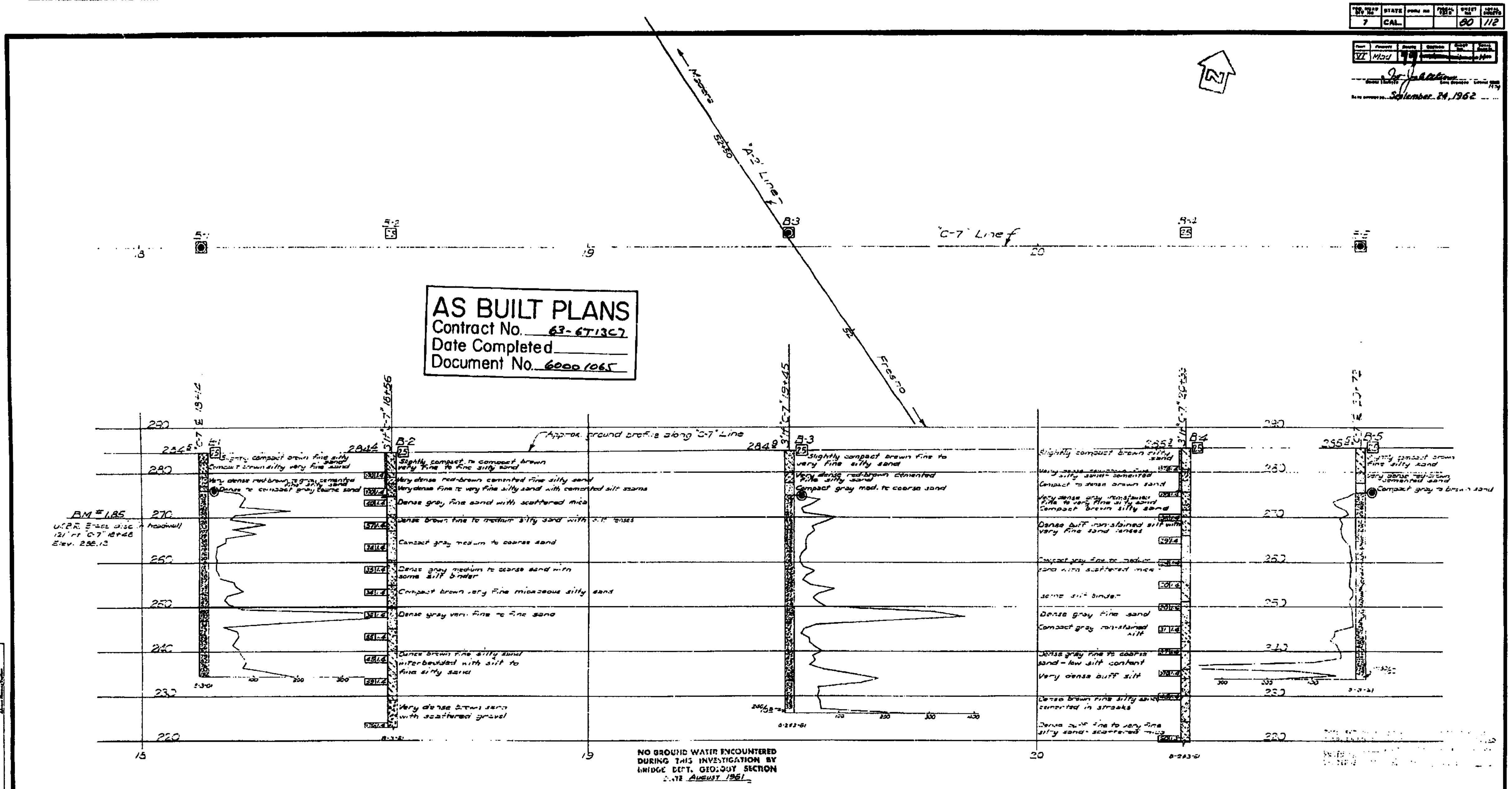
CU 06200
WO 225401

SHEET 19 OF 19

AS BUILT PLANS
Contract No. 06-225404
Date Completed 11-24-87
Document No.

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF TRANSPORTATION.

6/2/88 SUPERVISOR OF MICROFILM SERVICES



AS BUILT PLANS
Contract No. 63-6T13C7
Date Completed
Document No. 60001065

BRIDGE DEPARTMENT

CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

DIAGRAM SHOWING THE BASIS FOR ESTIMATES OF GRADE SIZE DISTRIBUTION USED IN DETERMINATION OF CLASS NAMES. IF GRAVEL IS PRESENT IN APPRECIABLE AMOUNTS THE TERM "GRAVELLY" MAY BE ADDED TO THE CLASS NAME, VIZ. "GRAVELLY SAND". THE TERMS "COARSE", "MEDIUM" AND "FINE" WHEN USED TO DESCRIBE SAND, SILT AND GRAVEL REFER TO STANDARD GRADE SIZE LIMITS.

LEGEND OF EARTH MATERIALS

Gravel; Sand; Silt; Clay; Sandy Clay or Clayey Sand; Sandy Silt or Silty Sand; Silty Clay or Clayey Silt; Peat and Organic Matter; Fill Material; Igneous Rock; Sedimentary Rock; Metamorphic Rock

LEGEND OF BORING OPERATIONS

Penetrometer; 2½" Cone Penetrometer; Sampler boring (dry); Rotary boring (wet); Auger boring (dry); Jet boring; Core boring; Test pit

1" Soil Tube — Rotary Boring — Penetration Boring

NOTE

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

AVENUE 7 OVERCROSSING

LOG OF TEST BORINGS

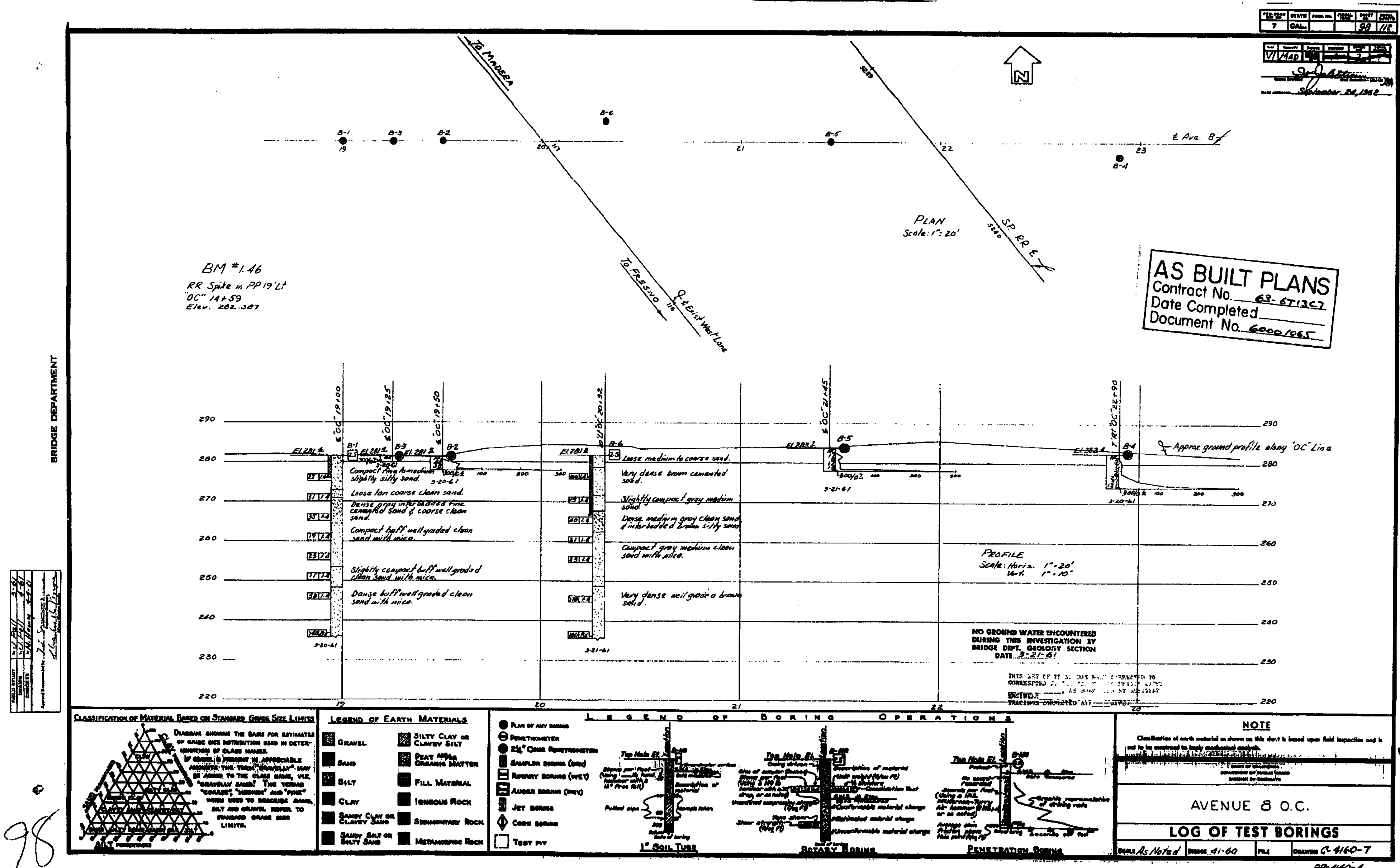
SCALE 1" = 10' | BRIDGE 41-64 | DRAWING C-4164-7

September 24, 1962

7 | CAL. | 80 | 112

80

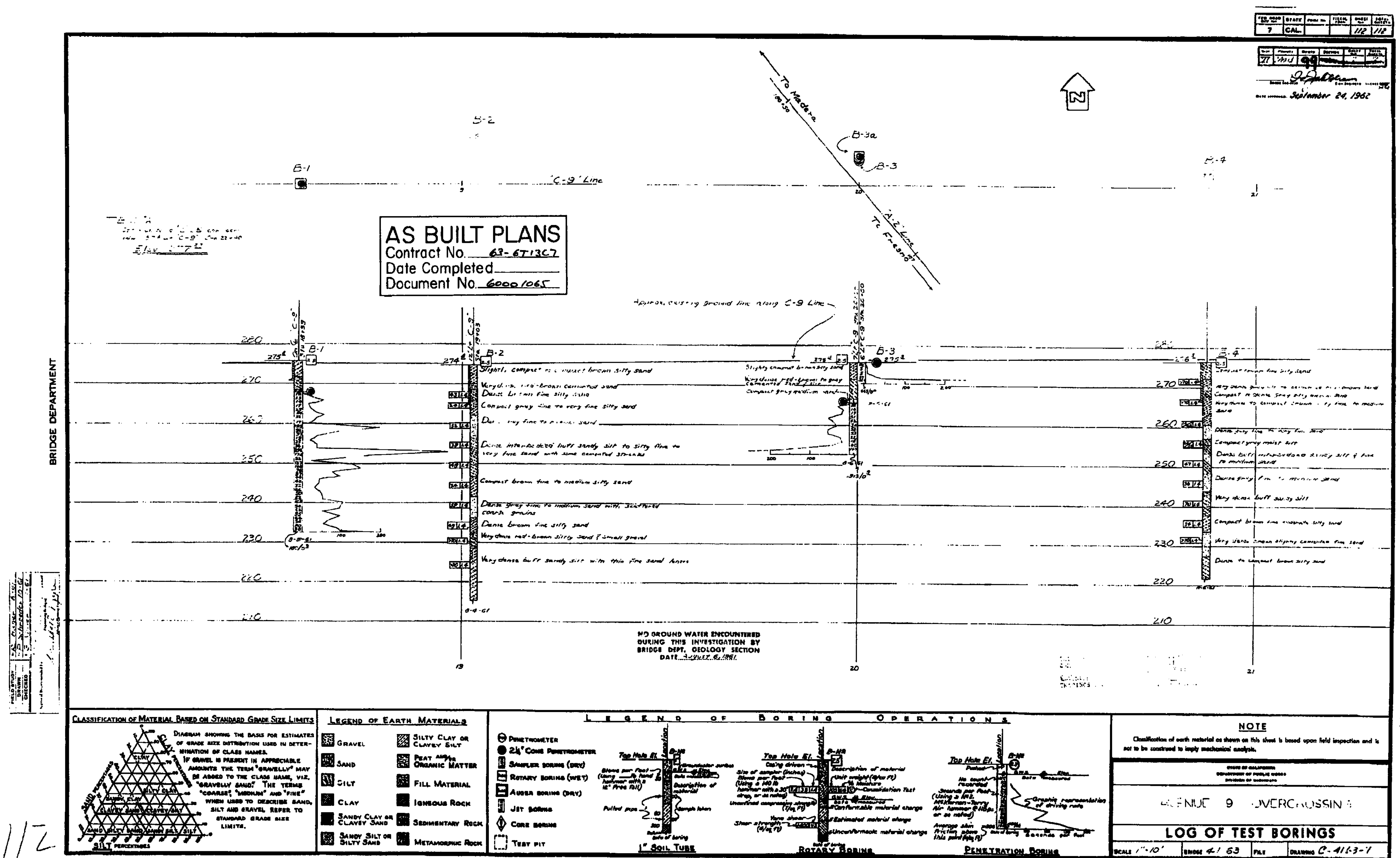
I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.



I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE 1-17-72 SIGNATURE [signature] TITLE SR [illegible]

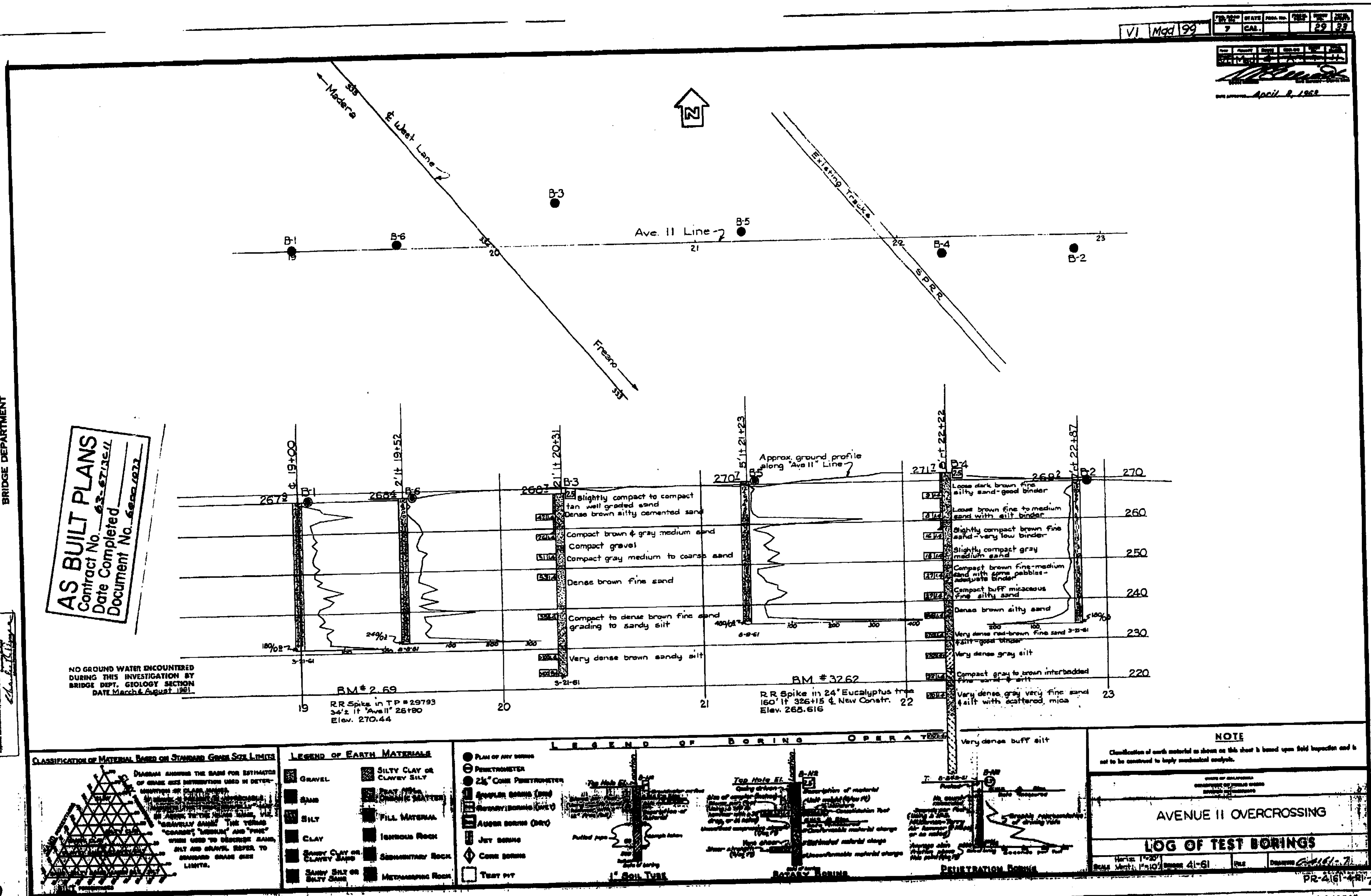
98



PR4163-4

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE ______ SIGNATURE ______ TITLE ______



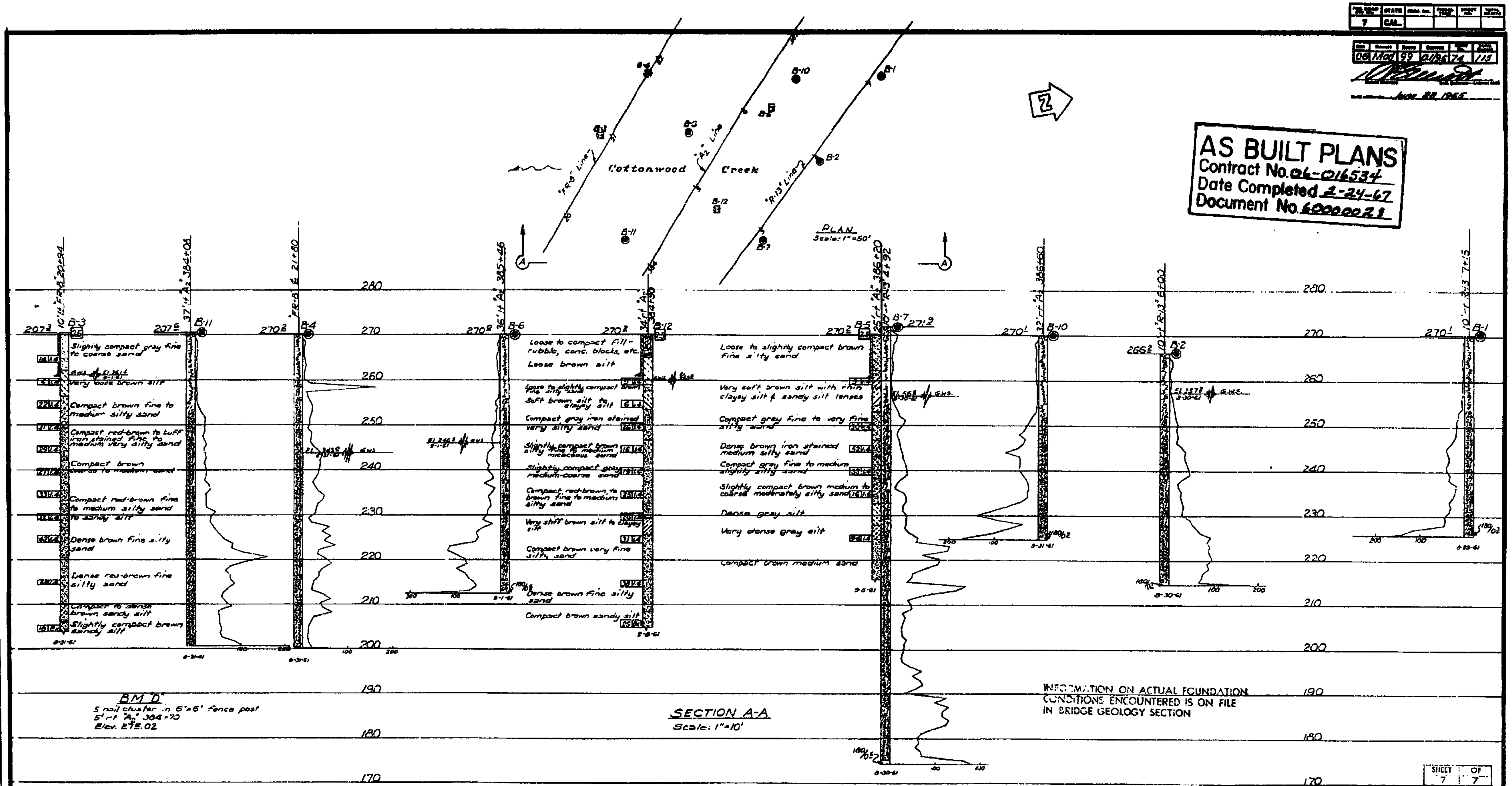
I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE 2/7/72 SIGNATURE [signature] TITLE SR DMO

BRIDGE DEPARTMENT

Dist.	County	Route	Section	Sheet No.	Total Sheets
06	Mad	99	21/36	74	115

AS BUILT PLANS
Contract No. 06-016534
Date Completed 2-24-67
Document No. 60000021



CLASSIFICATION OF MATERIAL BASED ON STANDARD GRAIN SIZE LIMITS

Diagram showing the basis for estimates of grade size distribution used in determination of class names. If gravel is present in appreciable amounts the term "gravelly" may be added to the class name, viz. "gravelly sand". The terms "coarse", "medium" and "fine" when used to describe sand, silt and gravel refer to standard grade size limits.

LEGEND OF EARTH MATERIALS

Gravel, Sand, Silt, Clay, Sandy Clay or Clayey Sand, Sandy Silt or Silty Sand, Silty Clay or Clayey Silt, Peat and/or Organic Matter, Fill Material, Igneous Rock, Sedimentary Rock, Metamorphic Rock

LEGEND OF BORING OPERATIONS

Penetrometer; 2½" Cone Penetrometer; Sampler boring (dry); Rotary boring (wet); Auger boring (dry); Jet boring; Core boring; Test pit

1" Soil Tube — Rotary Boring — Penetration Boring

NOTE

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

COTTONWOOD CREEK

LOG OF TEST BORINGS

Scale As shown | Bridge 41-65 4L | Drawing 4165-9

Sheet 7 of 7

PREL. DRAWING NO. P-4165-9

PR-4165-3

74

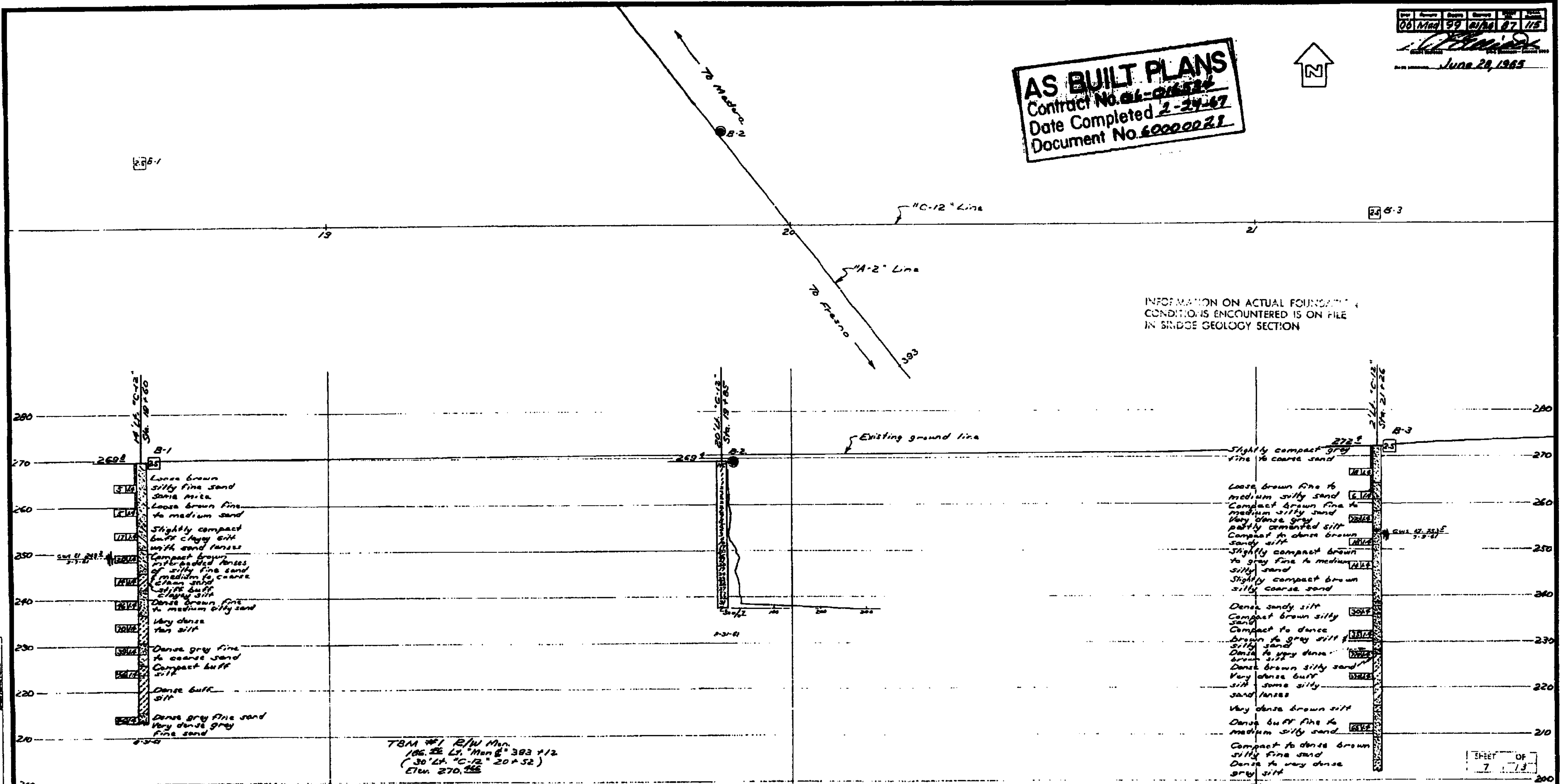
1307

Fed. Road Dist. No.	State	Fed. Aid Proj. No.	Fiscal Year	Sheet No.	Total Sheets
7	CAL.				

Dist	County	Route	Section	Sheet No.	Total Sheets
06	Mad	99	...	87	115

June 28, 1965

AS BUILT PLANS
Contract No. 06-016324
Date Completed 2-24-67
Document No. 60000021



SHEET 7 OF 13

BRIDGE DEPARTMENT

Classification of Material Based on Standard Grain Size Limits

Diagram showing the basis for estimates of grain size distribution used in determination of class names. If gravel is present in appreciable amounts the term "gravelly" may be added to the class name, viz. "gravelly sand". The terms "coarse", "medium" and "fine" when used to describe sand, silt and gravel refer to standard grain size limits.

Legend of Earth Materials

Gravel, Sand, Silt, Clay, Sandy Clay or Clayey Sand, Sandy Silt or Silty Sand, Silty Clay or Clayey Silt, Peat and Organic Matter, Fill Material, Igneous Rock, Sedimentary Rock, Metamorphic Rock

Legend of Boring Operations

Penetrometer; $2\frac{1}{2}$" Cone Penetrometer; Sampler boring (dry); Rotary boring (wet); Auger boring (dry); Jet boring; Cone boring; Test pit

1" Soil Tube — Rotary Boring — Penetration Boring

NOTE

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

State of California
Department of Public Works
Division of Highways

AVENUE 12 OVERCROSSING

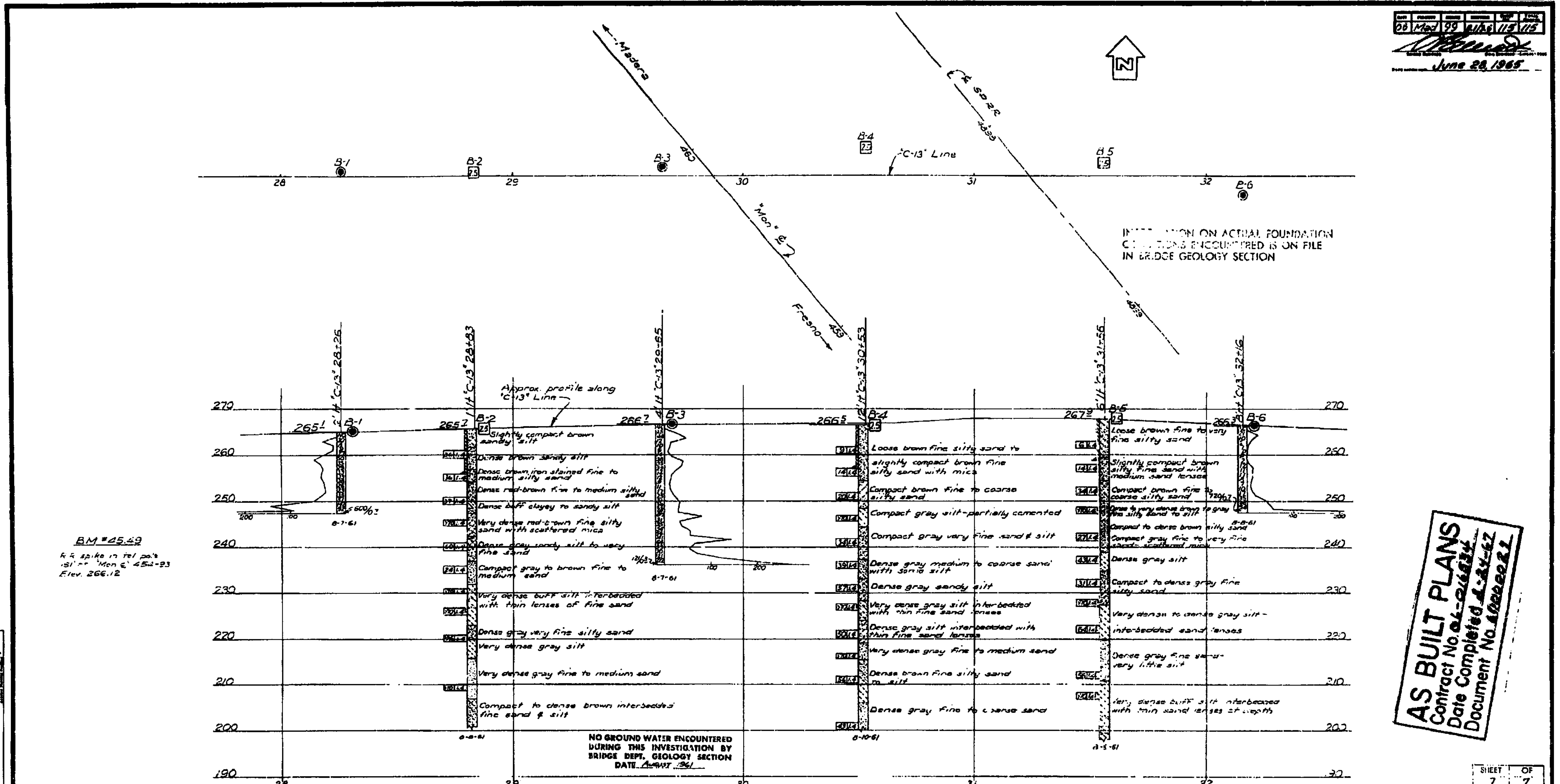
LOG OF TEST BORINGS

Scale 1" = 10' | Bridge 41-66 | File | Drawing 4166-7

PR-4166-7

87

1520



SHEET 7 OF 7

CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

LEGEND OF EARTH MATERIALS

GRAVEL · SAND · SILT · CLAY · SANDY CLAY OR CLAYEY SAND · SANDY SILT OR SILTY SAND · SILTY CLAY OR CLAYEY SILT · PEAT AND/OR ORGANIC MATTER · FILL MATERIAL · IGNEOUS ROCK · SEDIMENTARY ROCK · METAMORPHIC ROCK

LEGEND OF BORING OPERATIONS

PENETROMETER · $2\frac{1}{2}$" CONE PENETROMETER · SAMPLER BORING (DRY) · ROTARY BORING (WET) · AUGER BORING (DRY) · JET BORING · CONE BORING · TEST PIT

1" SOIL TUBE · ROTARY BORING · PENETRATION BORING

NOTE

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

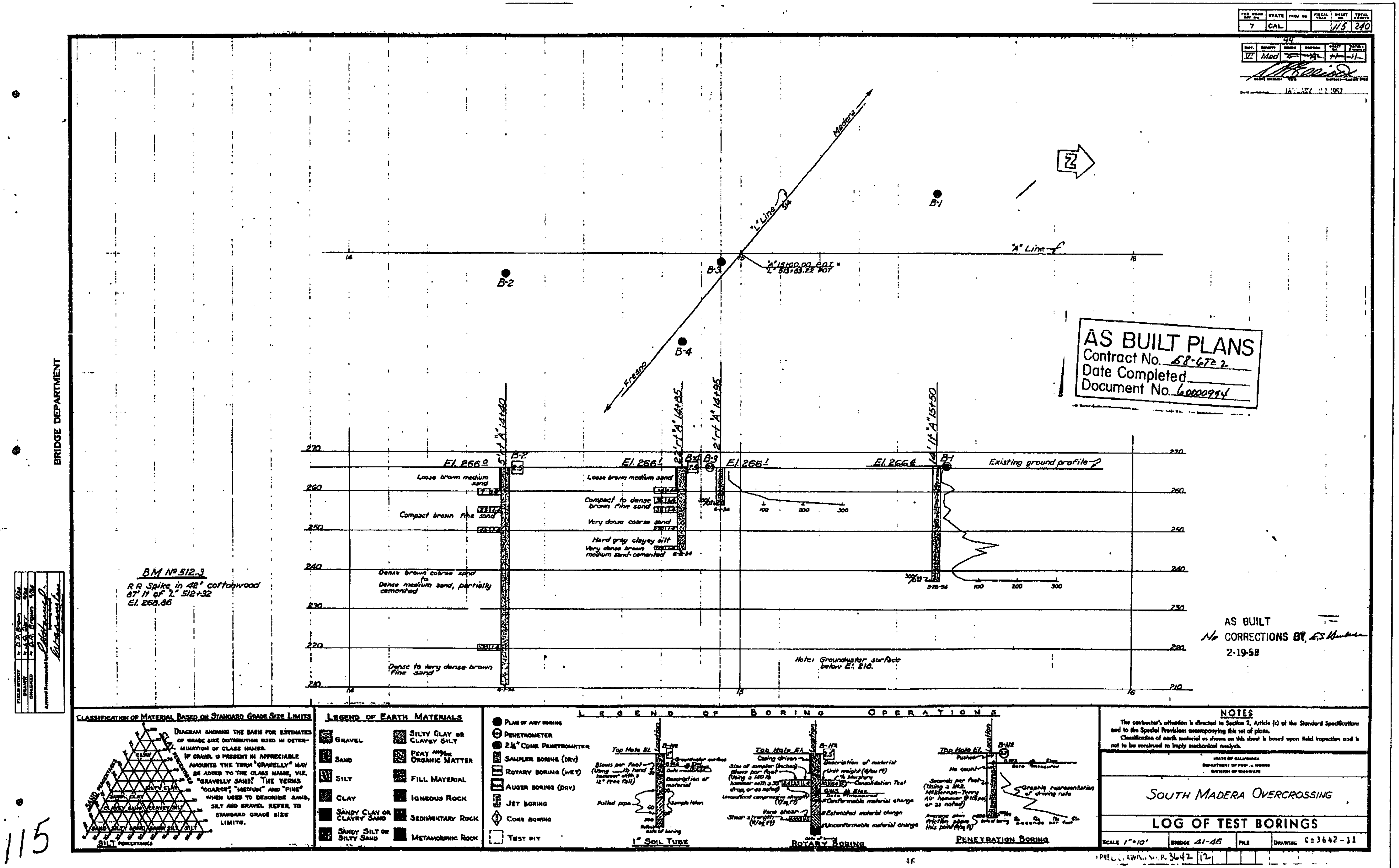
AVENUE 13 OVERCROSSING

LOG OF TEST BORINGS

SCALE Horiz: 1"=20' Vert: 1"=10'	BRIDGE 41-62	FILE	DRAWING 4162-7

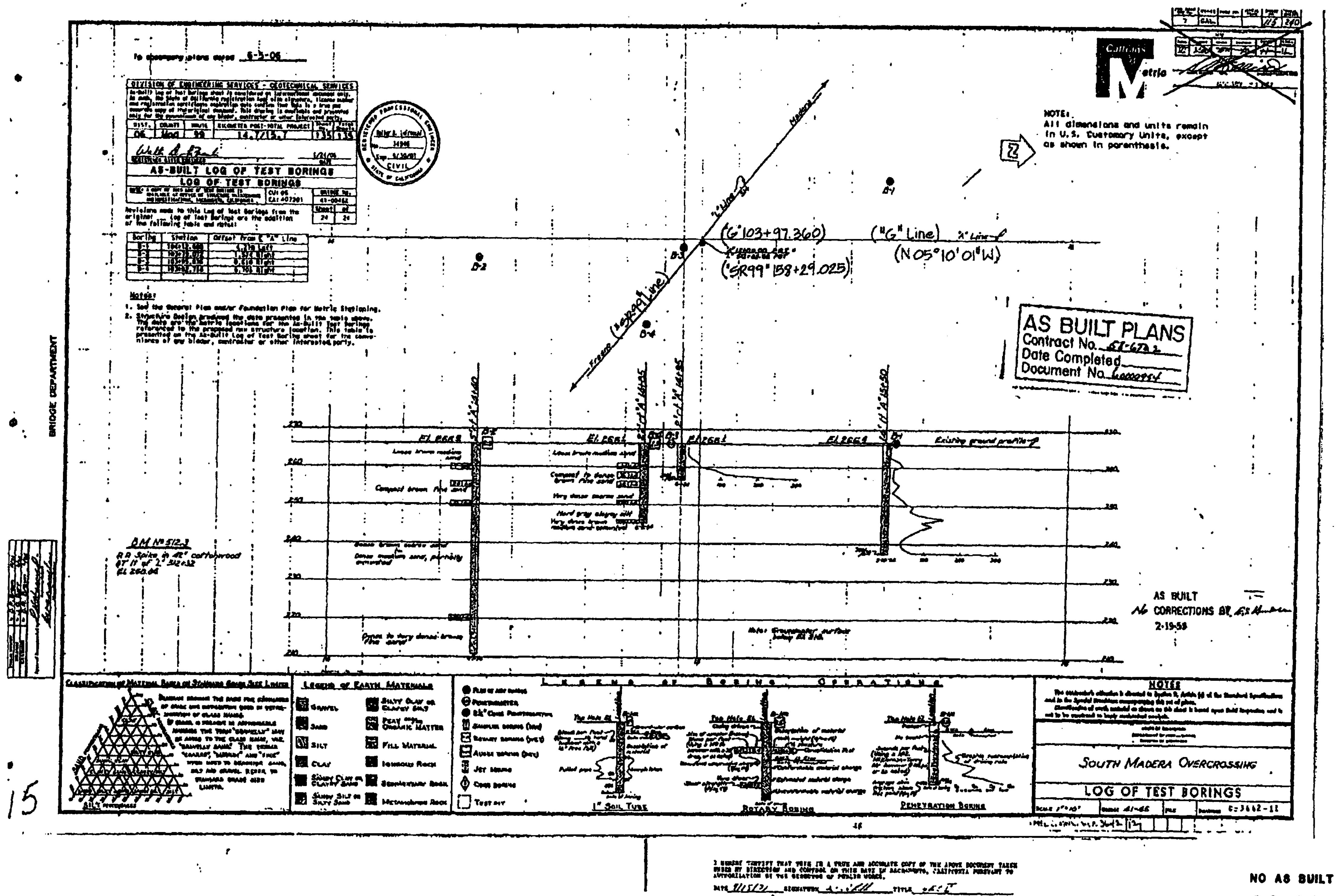
PR-4162-4

115



I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE 9/15/71 SIGNATURE [illegible] TITLE [illegible]



NO AS BUILT CHANGES

AS BUILT

CORRECTIONS BY Victor M. Diaz/CD

CONTRACT NO. 06-407204

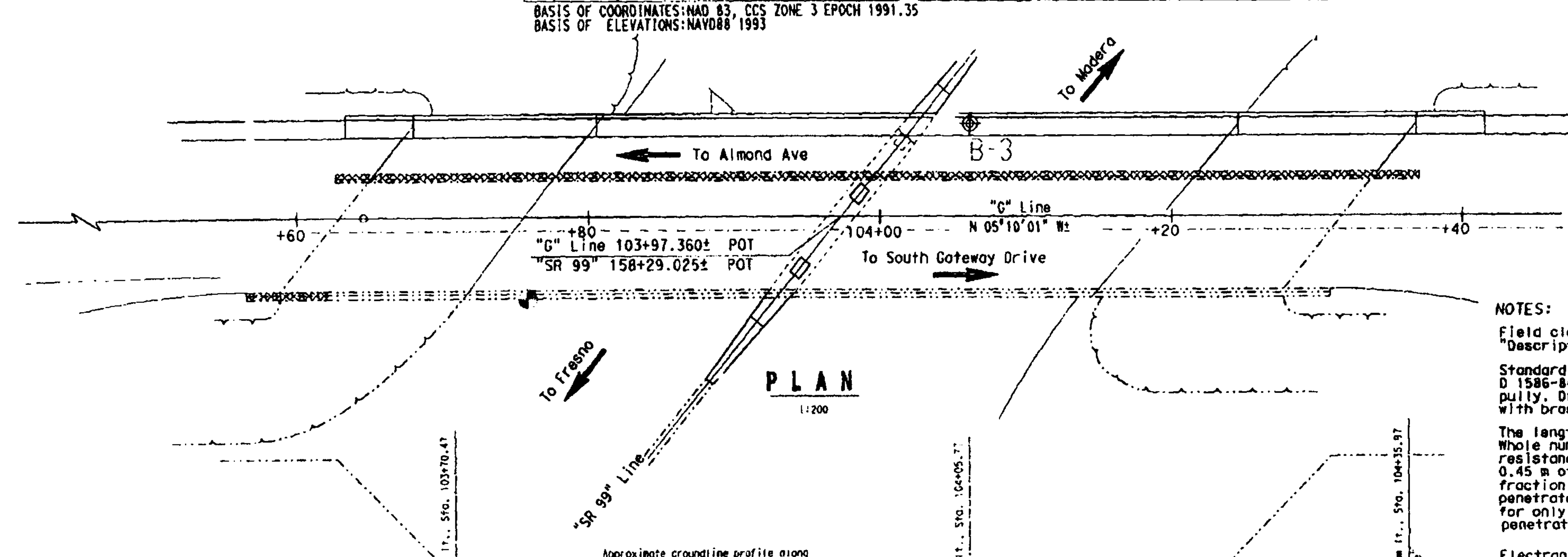
DATE 09-26-07/05-30-08

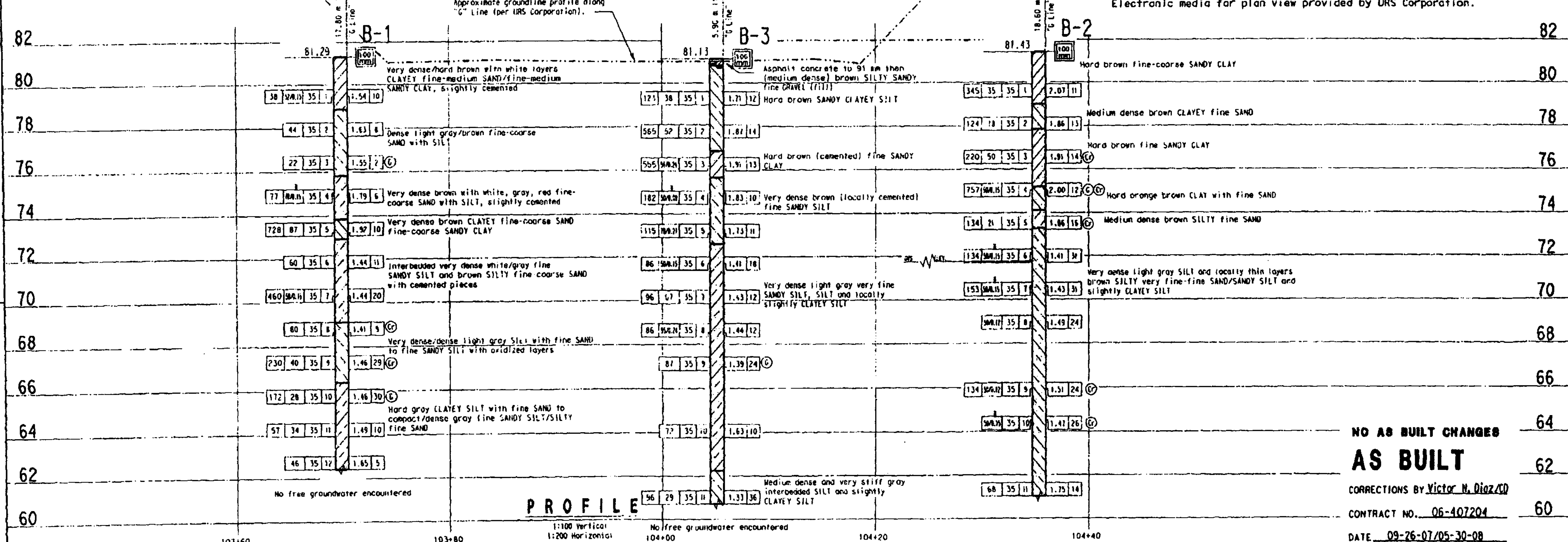
Elevation References: Per URS Corporation

CONSTRUCTION CONTROL SURVEY DATA

NO.	MONUMENT	NORTHING	EASTING	ELEV.	Description
1	BM 552	550892.745	2039592.191	82.301	USGS Monument "Madera" from intersection of Gateway and 9th St. go east to the Easterly trail of the SP tracks, then go 22 meters more to the East. From the ℄ of 9th St. go 17 meters south to said monument. Monument is 19' West of the ℄ of "D" St. Monument is up 0.05 mm from surface.
2	BM 521	550055.924	2039526.490	80.762	50mm brass disk at the intersection of Madera Ave and Maple St. in the N/W corner of said intersection. 4.0 m west of ℄ and DI and 0.85 north of TBC.

BASIS OF COORDINATES: NAD 83, CCS ZONE 3 EPOCH 1991.35
BASIS OF ELEVATIONS: NAVD88 1993





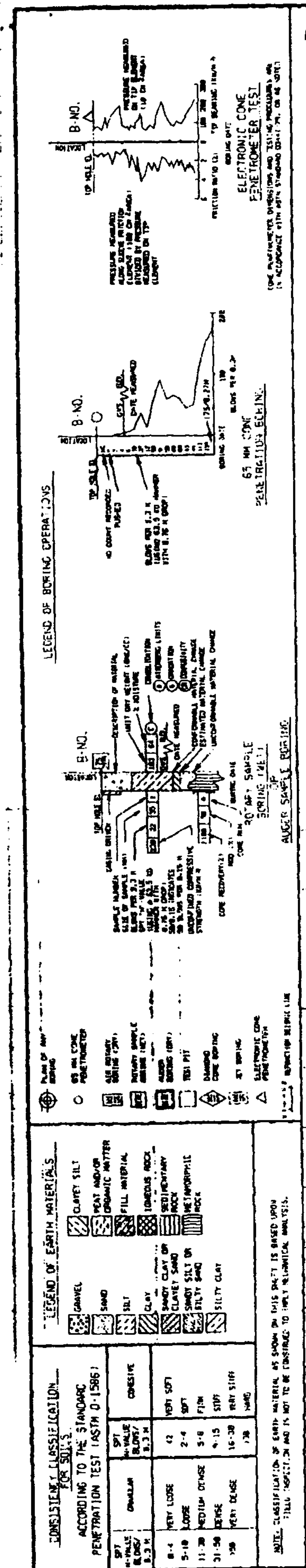
NOTES:

Field classification of soils was in accordance with ASTM D 2488-93 "Description and Identification of Soils (Visual-Manual Procedure)".

Standard Penetration tests were performed in accordance with ASTM D 1586-84 using a safety hammer operated with cat-head, rope and pully. Drill rods were 41 mm diameter "A"-rods; sampler was driven with brass liners.

The length of each sample interval is shown graphically on the boring log. Whole number blow counts ("N") represent the "standard penetration resistance" interval in accordance with ASTM D1586-84. Where less than 0.45 m of penetration is achieved, the blow count shown is for that fraction of the "standard penetration resistance" interval actually penetrated. Where indicated by an asterisk (*) the number of blows is for only that fraction of the initial 0.15 m "seating drive" interval penetrated.

Electronic media for plan view provided by URS Corporation.



DIST.	COUNTY	ROUTE	KP TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	14.7/15.7	134	135

08-01-03
REGISTERED GEOTECHNICAL ENGINEER
6-5-06
PLANS APPROVAL DATE
TABER CONSULTANTS
3911 West Capitol Ave.
West Sacramento, CA 95691
JOB No. 1P2/798/243-2 LOCATION: 36120-H1:26BN;138W

REGISTERED PROFESSIONAL ENGINEER FRANKLIN P. TABER No. 816 EXP. 3-31-04 GEOTECHNICAL STATE OF CALIFORNIA

URS Corporation
1380 Lead Hill Road, Suite 100
Roseville, California 95661

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

To get to the Caltrans web site, go to: http://www.dot.ca.gov

NO AS BUILT CHANGES

AS BUILT

CORRECTIONS BY Victor N. Diaz/CD
CONTRACT NO. 06-407204
DATE 09-26-07/05-30-08

DESIGN OVERSIGHT John Fujimoto
3-6-06
SIGN OFF DATE

DRAWN BY T. M. Arkus
CHECKED BY T. A. Krouse
T. A. Krouse FIELD INVESTIGATOR
DATE February 2001

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

J. England
PROJECT ENGINEER

BRIDGE NO. 41-0046K
KP 15.7

SOUTH MADERA OC (WIDEN)
LOG OF TEST BORINGS

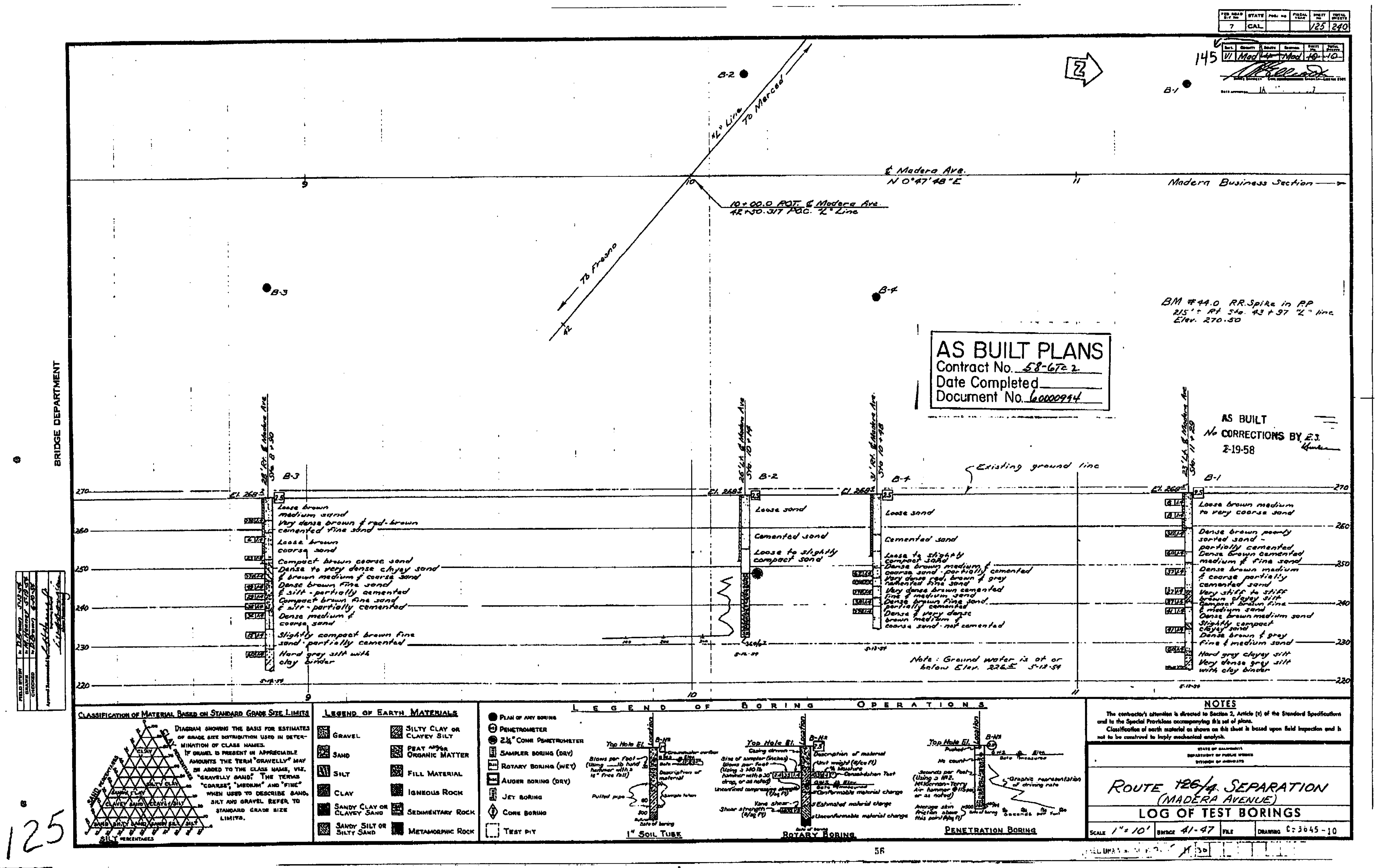
ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

CU 06
EA 407201
FILE => 41-0046K-z-ltb01.dgn

SHEET 23 OF 24

12.14.01 1P2798243-20.DWG 1-1

USERNAME => vbelfran DATE PLOTTED => 01-APR-2008 TIME PLOTTED => 09:46



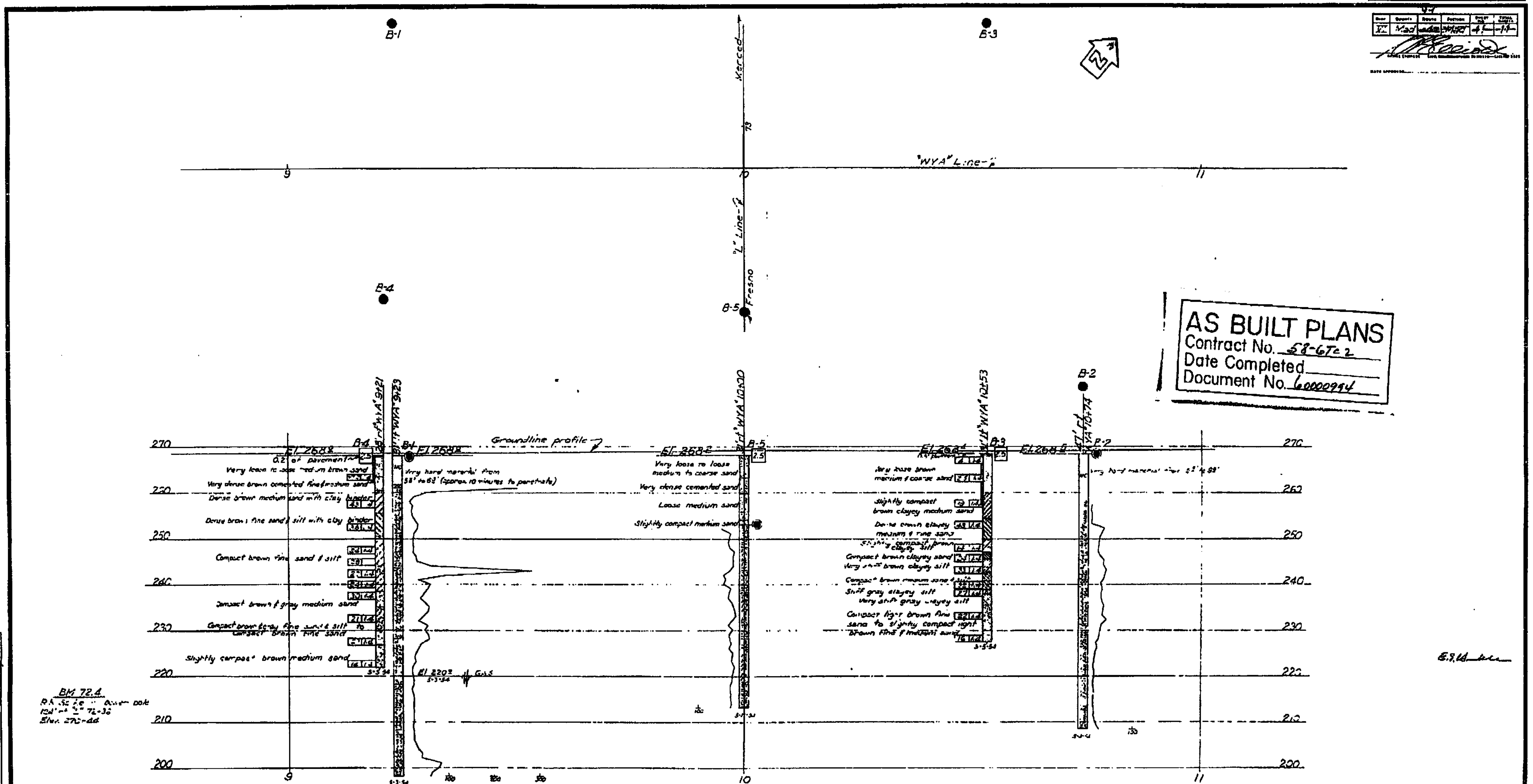
125

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE 9/15/71 SIGNATURE ______ TITLE ______

7	CAL.			159	240

BRIDGE DEPARTMENT



Classification of Material Based on Standard Grade Size Limits

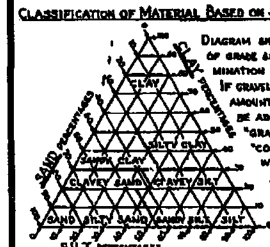


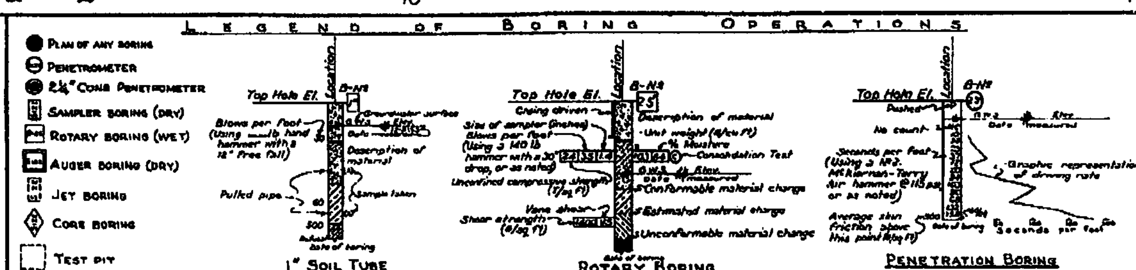
Diagram showing the basis for estimates of grade size distribution used in determination of class names.

If gravel is present in appreciable amounts the term "gravelly" may be added to the class name, viz. "gravelly sand." The terms "coarse", "medium" and "fine" when used to describe sand, silt and gravel refer to standard grade size limits.

Legend of Earth Materials

- Gravel
- Sand
- Silt
- Clay
- Sandy Clay or Clayey Sand
- Sandy Silt or Silty Sand
- Silty Clay or Clayey Silt
- Peat and/or Organic Matter
- Fill Material
- Igneous Rock
- Sedimentary Rock
- Metamorphic Rock

Legend of Boring Operations



NOTES

The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans.

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

WEST YOSEMITE AVENUE OVERCROSSING

LOG OF TEST BORINGS

SCALE 1"=10'	BRIDGE 41-49	FILE	DRAWING C-3643-11

3643 11

159

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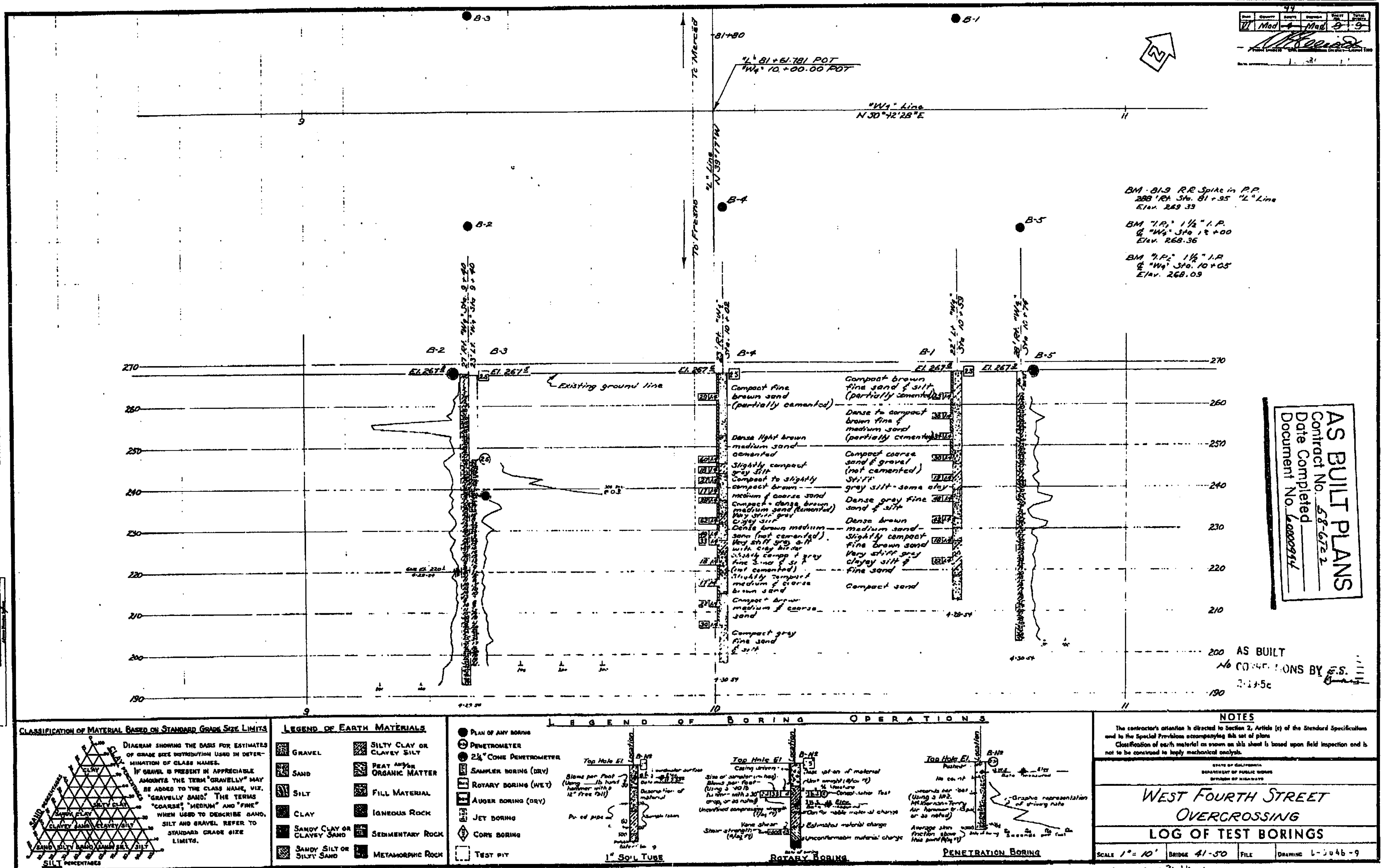
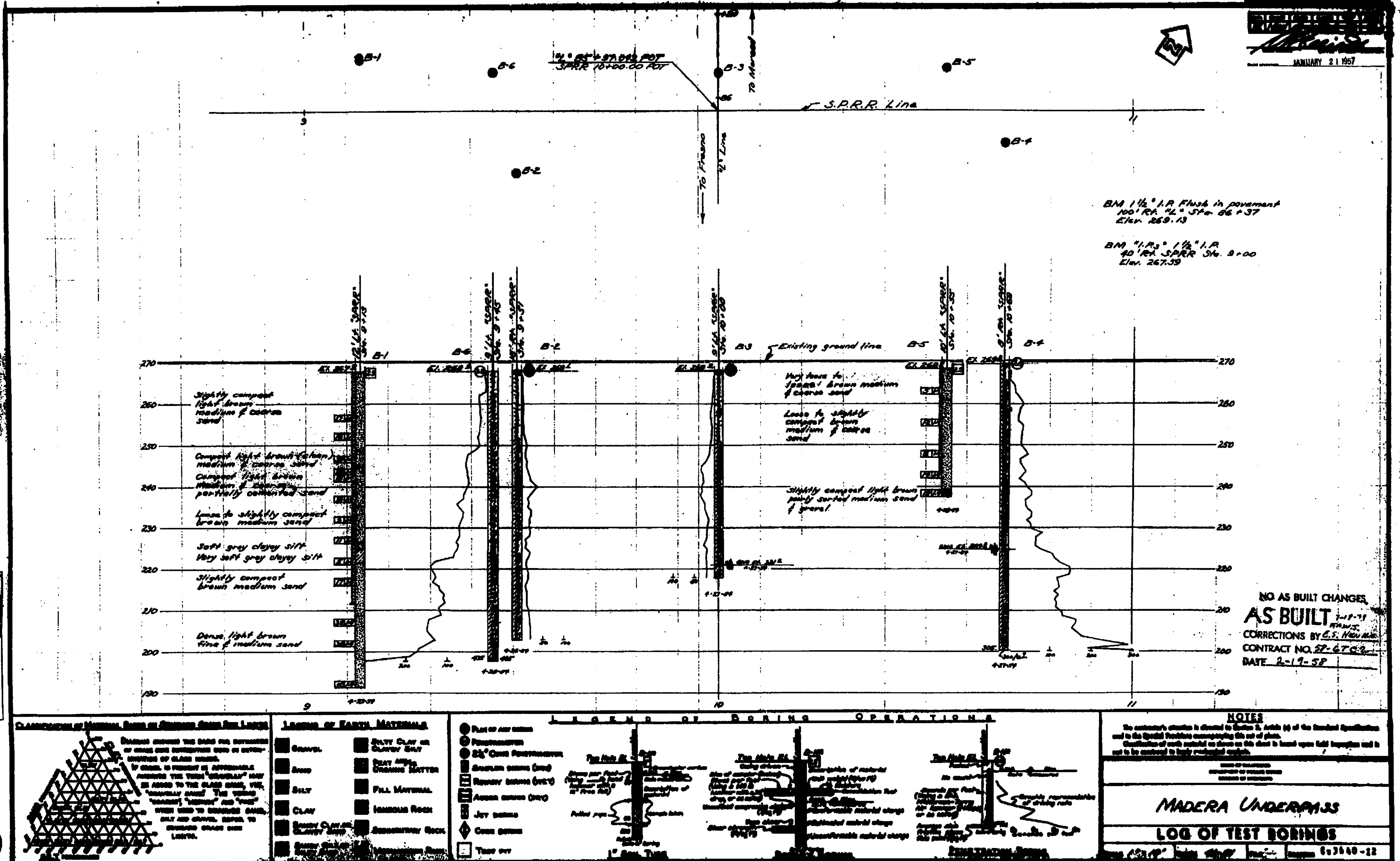
DATE 9/15/71 SIGNATURE [illegible] TITLE [illegible]



168

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE 9/15/71 SIGNATURE ________ TITLE ________



NO AS BUILT CHANGES
AS BUILT
CORRECTIONS BY E.S. Houm...
CONTRACT NO. 58-6TC2
DATE 2-19-58

180

AS BUILT PLANS
Contract No. 58-6TC2
Date Completed
Document No. 6....994

1-31-80

AS BUILT PLANS
Contract No. 06-178804
Date Completed 11-9-89
Document No. ______

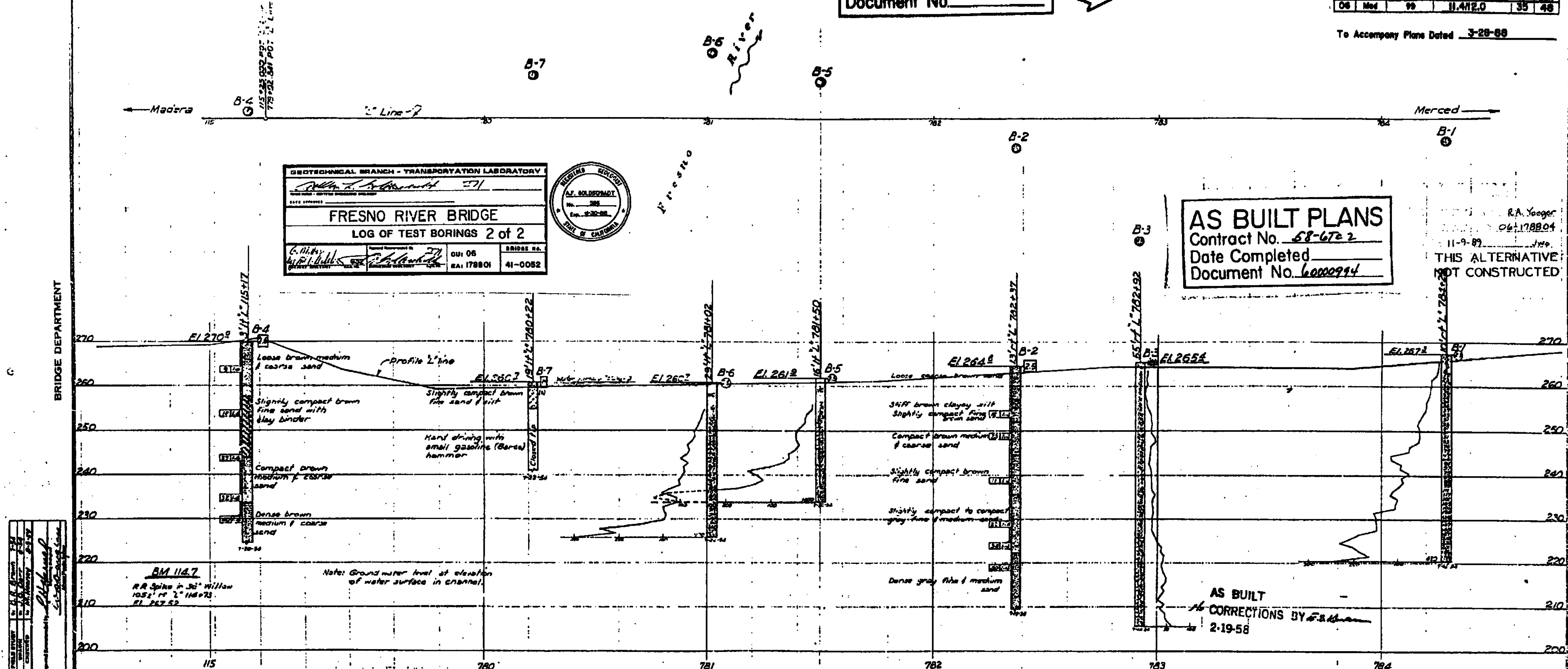
Dist.	County	Route	Post Miles—Total Project	Sheet No.	Total Sheets
06	Mad	99	11.4/12.0	35	48

To Accompany Plans Dated 3-29-88

GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY
FRESNO RIVER BRIDGE
LOG OF TEST BORINGS 2 of 2
CU: 06 EA: 178801
BRIDGE NO. 41-0052

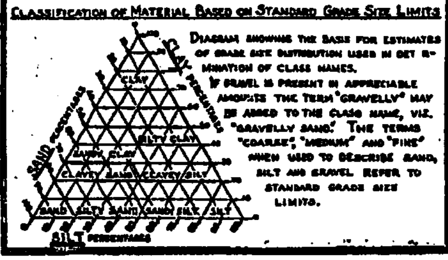
AS BUILT PLANS
Contract No. 58-6TC2
Date Completed ______
Document No. 60000994

R.A. Yeager
06-178804
11-9-89
THIS ALTERNATIVE NOT CONSTRUCTED



CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

Diagram showing the basis for estimates of grade size distribution used in determination of class names. If gravel is present in appreciable amounts the term "gravelly" may be added to the class name, viz. "gravelly sand." The terms "coarse", "medium" and "fine" when used to describe sand, silt and gravel refer to standard grade size limits.

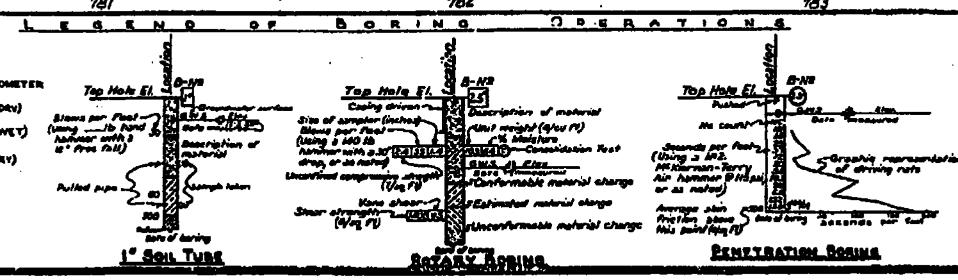


LEGEND OF EARTH MATERIALS

- Gravel
- Sand
- Silt
- Clay
- Sandy Clay or Clayey Sand
- Sandy Silt or Silty Sand
- Silty Clay or Clayey Silt
- Peat and/or Organic Matter
- Fill Material
- Igneous Rock
- Sedimentary Rock
- Metamorphic Rock

LEGEND OF BORING OPERATIONS

- Plan of any boring
- Penetrometer
- 2½" Cone Penetrometer
- Sampler boring (dry)
- Rotary boring (wet)
- Auger boring (dry)
- Jet boring
- Core boring
- Test pit



NOTES

The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans.

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

BRIDGE ACROSS FRESNO RIVER

LOG OF TEST BORINGS

SCALE Horiz: 1"=80' Vert: 1"=10' | SERIES 41-52 R/L | FILE | DRAWING C-3644-9

PREL DRAWING NO. F-3644 35

35
203

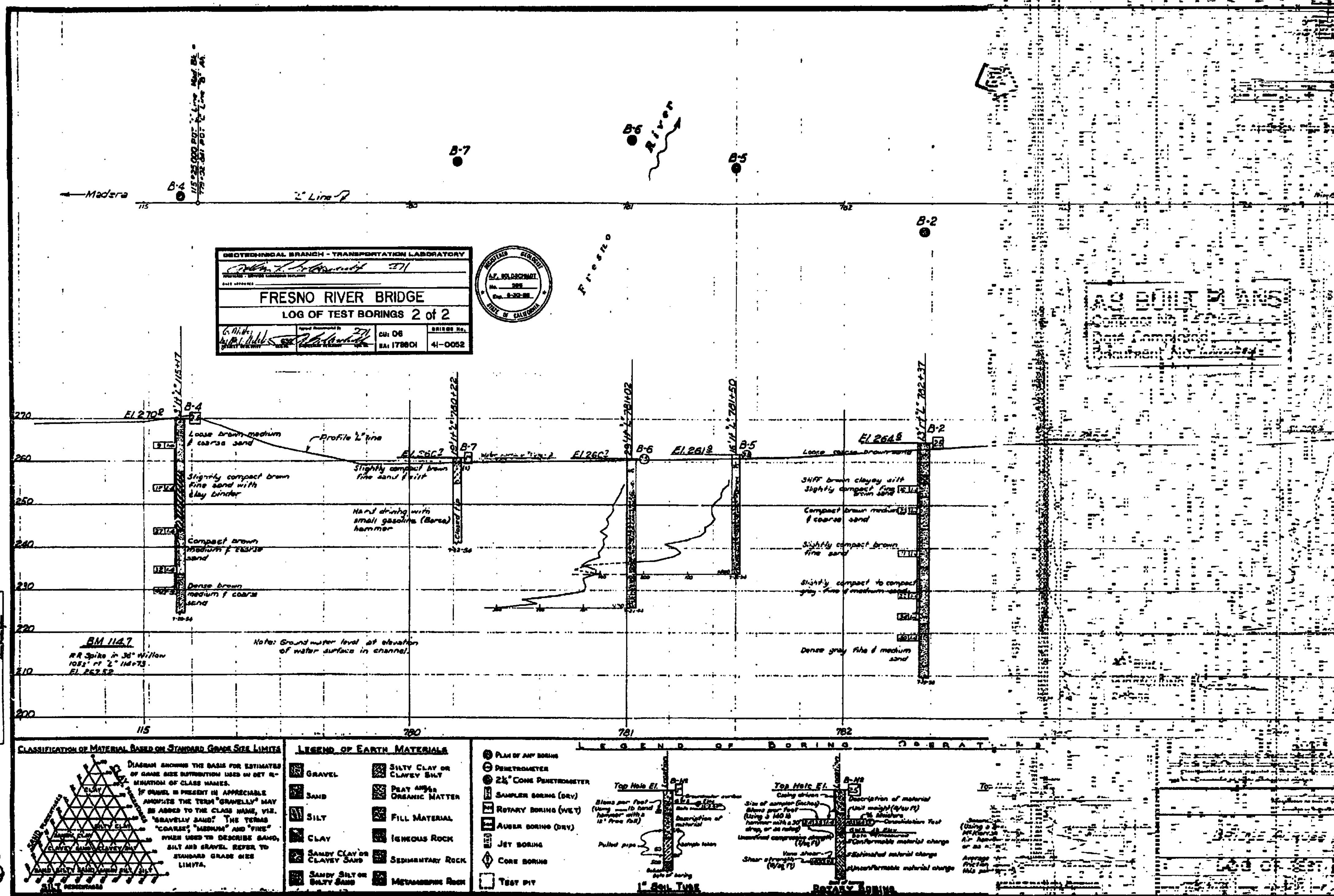
BRIDGE DEPARTMENT

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE 9/15/77 SIGNATURE ______ TITLE MAC II

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF TRANSPORTATION.

8/21/00 ______ SUPERVISOR OF ______



48

~~203~~

135

AS BUILT PLANS
Contract No. 06-178804
Date Completed 11-9-89
Document No.

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY ... UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO ... AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE 7/15/77 SIGNATURE

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT ... UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA ... AUTHORIZATION BY THE DIRECTOR OF TRANSPORTATION.

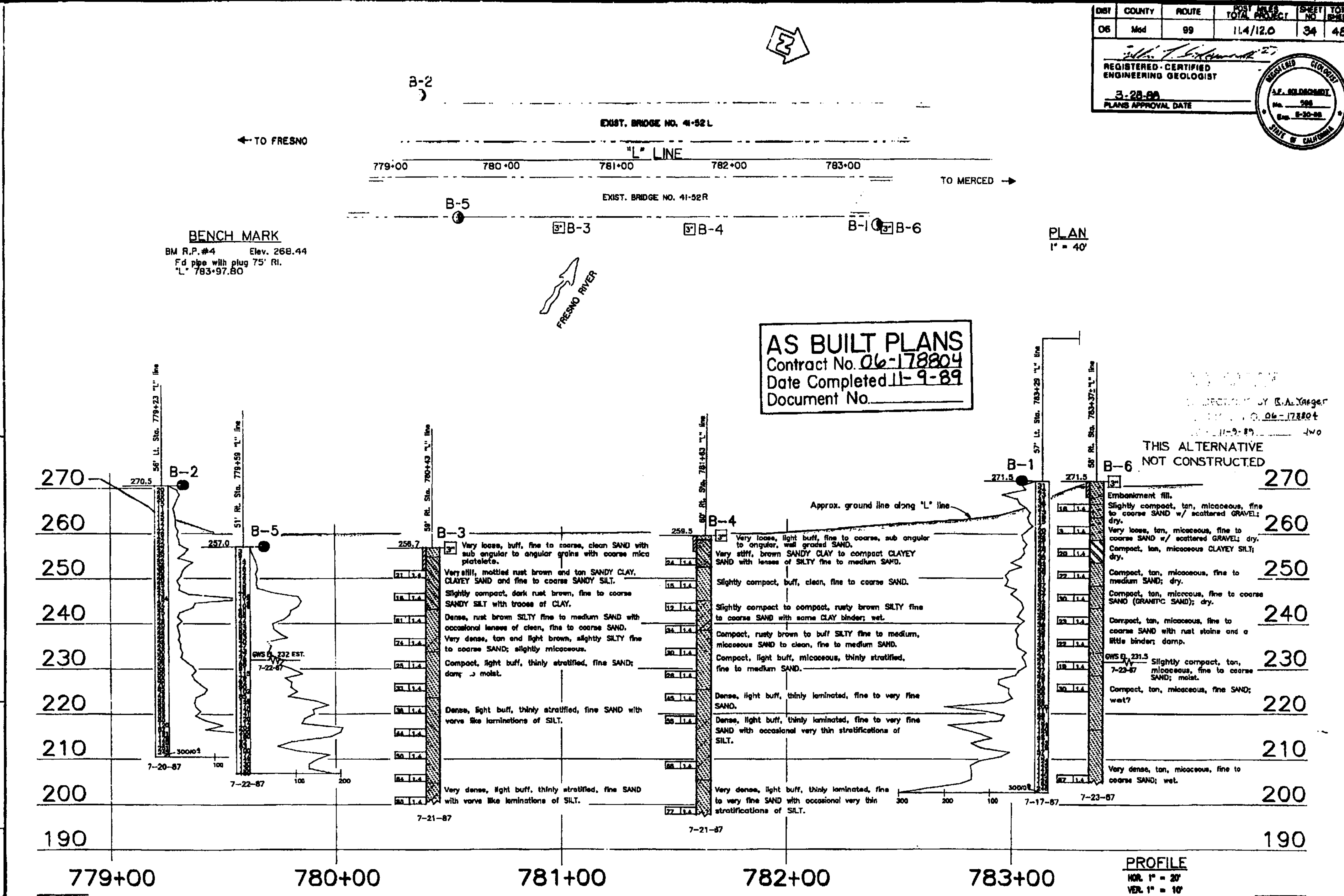
8/21/00 SUPERVISING

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO	TOTAL SHEETS
06	Mad	99	11.4/12.0	34	48

REGISTERED-CERTIFIED ENGINEERING GEOLOGIST

3-28-88

PLANS APPROVAL DATE



GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY

DRAWN BY L Howell 8/87

CHECKED BY

State of CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURES - DESIGN 7

BRIDGE NO. 41-52

POST MILE 11.7

FRESNO RIVER BRIDGE (WIDEN)

LOG OF TEST BORINGS 1 of 2

CU 06200
EA 178801

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

34

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF TRANSPORTATION.

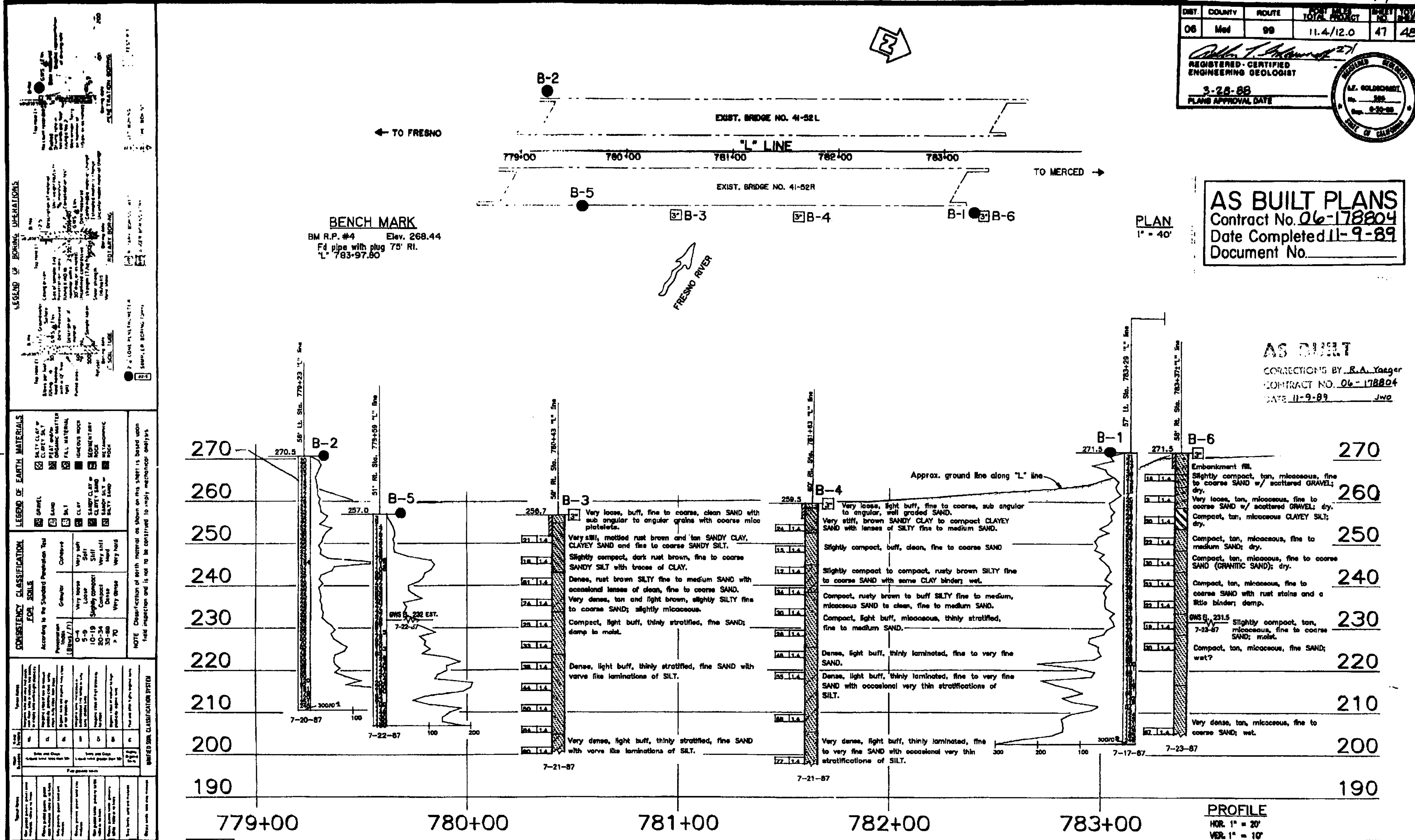
8/21/00

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	11.4/12.0	47	48

REGISTERED - CERTIFIED ENGINEERING GEOLOGIST

3-28-88

PLANS APPROVAL DATE



AS BUILT PLANS

Contract No. 06-178804

Date Completed 11-9-89

Document No.

AS BUILT

CORRECTIONS BY R.A. Yaeger

CONTRACT NO. 06-178804

DATE 11-9-89 JWO

GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY

DRAWN BY L. Howell 8/87

CHECKED BY

State of CALIFORNIA DEPARTMENT OF TRANSPORTATION

STRUCTURES - DESIGN

P. Cotter 345-09

BRIDGE NO. 41-52

POST MILE 11.7

FRESNO RIVER BRIDGE (WIDEN)

LOG OF TEST BORINGS 1 of 2

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 06

EA 178801

SHEET 12 OF 13

47

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF TRANSPORTATION.

8/21/90 SUPERVISOR OF

Log of Test Boring: MW-8

Project No: 17-99015
Project: Harmin's Liquor
Location: Madera, CA
Depth to Water (Initial): 110'

Figure: A-4
Logged By: S.B.
Client: Amrik Gill
Depth to Water (Completion): 110'

Depth	Symbol	Description (SUBSURFACE PROFILE)	Number (SAMPLE)	OVM (SAMPLE)	Blows/Foot (SAMPLE)	Volatile Organic Concentration Parts Per Million (ppm) 100 300 500 700 900	Notes
		Ground Surface					
0		Approximately 2 inches of asphalt beneath 3 inch layer pf soil.					
		Silty Sand (SM)					
5		Brown; moist; fine to medium grained; gravel particles; loose.					
10		Hardpan; grades light brown. Very hard drilling.					
15							
20							
25		Grades brown and gray. Medium to coarse grained.					
30							
35		Grades fine.					
40		Grades gray. Fine to medium grained.					
45							

Drill Method: H/S Auger
Drill Date: 3/23/05
Hole Size: 8"

ASR Engineering, Inc.
3629 W. Gettysburg Ave.
Fresno, CA. 93722
phone: (559) 271-5260
fax: (559) 271-5267
e-mail: asrengineering@sbcglobal.net

GEO TRACKER ID:T603900177

Drilled by: CME-75

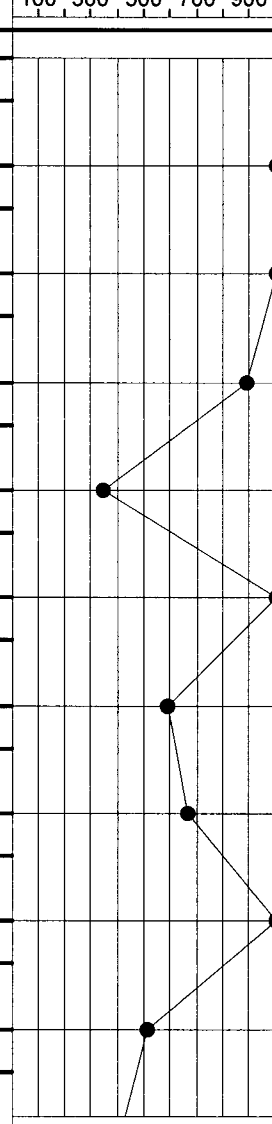
Engineer: Zaki Niaz
P.M. 11.80

Log of Test Boring: MW-6

Project No: 17-99015
Project: Harmin's Liquor
Location: Madera, CA
Depth to Water (Initial): 110'

Figure: A-2
Logged By: S.B.
Client: Amrik Gill
Depth to Water (Completion): 110'

SUBSURFACE PROFILE			SAMPLE			Volatile Organic Concentration Parts Per Million (ppm)	Notes
Depth	Symbol	Description	Number	OVM	Blows/Foot	100 300 500 700 900	
0		Ground Surface					
0		***Clayey Sand (SC)*** Dark brown; moist; fine to medium grained; very soft.	1	-	-		
5			2	2129	3		No petroleum odor present.
10		Grades light brown.	3	1035	22		"
15		Grades dark brown. Dense.	4	894	60		"
20			5	346	31		"
25			6	1409	100+		"
30			7	592	56		Petroleum odor present.
35		***Poorly Graded Sand (SP)*** Gray; moist; medium grained; loose.	8	667	21		Moderate petroleum odor.
40		***Silty Sand (SM)*** Brown; moist; medium grained; dense.	9	4488	61		Very strong petroleum odor.
45		***Clayey Sand (SC)*** Gray; moist; fine to medium grained; firm.	10	512	36		Light petroleum odor.



Drill Method: H/S Auger
Drill Date: 3/21/05
Hole Size: 8"

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GEO TRACKER ID:T603900177

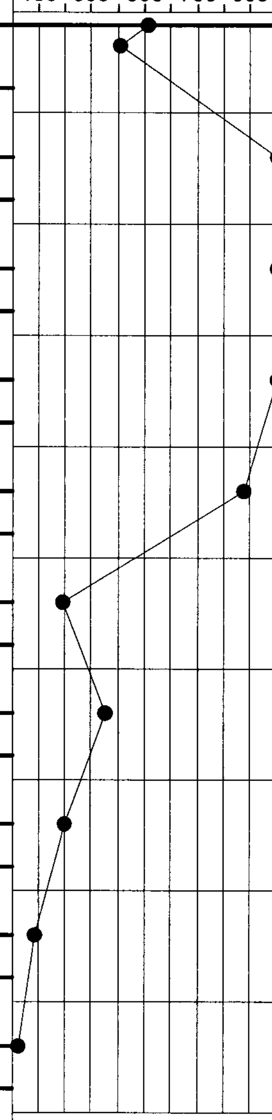
Drilled by: CME-75
Sheet: 1 of 3
Engineer: Zaki Niaz
P.M. 11.80

Log of Test Boring: MW-6

Project No: 17-99015
Project: Harmin's Liquor
Location: Madera, CA
Depth to Water (Initial): 110'

Figure: A-2
Logged By: S.B.
Client: Amrik Gill
Depth to Water (Completion): 110'

SUBSURFACE PROFILE			SAMPLE			Volatile Organic Concentration Parts Per Million (ppm)	Notes
Depth	Symbol	Description	Number	OVM	Blows/Foot	100 300 500 700 900	
		Clayey Sand (SC) Gray; moist; fine to medium grained; firm.	11	412	32		"
54		***Well-Graded Sand (SW)*** Light gray; damp; medium grained; loose.	12	1479	36		Moderate petroleum odor.
59			13	1006	37		"
64		***Poorly-Graded Sand (SP)*** Light gray; damp; medium grained; medium dense.	14	1786	55		"
69			15	879	66		Mild petroleum odor.
74			16	190	100+		"
79		***Silty Sand (SM)*** Light gray; damp; fine to medium grained; dense.	17	352	100+		No petroleum odor.
84			18	196	47		"
89		Grades light brown.	19	89	68		"
94		***Well-Graded Sand (SW)*** Light brown; moist; medium grained; dense.	20	27	48		No petroleum odor.



Drill Method: H/S Auger
Drill Date: 3/21/05
Hole Size: 8"

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GEO TRACKER ID:T603900177

Drilled by: CME-75
Sheet: 2 of 3
Engineer: Zaki Niaz

P.M. 11.80

Log of Test Boring: MW-6

Project No: 17-99015

Project: Harmin's Liquor

Location: Madera, CA

Depth to Water (Initial): 110'

Figure: A-2

Logged By: S.B.

Client: Amrik Gill

Depth to Water (Completion): 110'

Depth	Symbol	Description (SUBSURFACE PROFILE)	Number (SAMPLE)	OVM (SAMPLE)	Blows/Foot (SAMPLE)	Notes
103		***Clayey Sand (SC)*** Light gray; moist; fine to medium grained; medium dense.	21	11	35	No petroleum odor.
108		***Silty Sand (SM)*** Light brown; moist; fine to medium grained; medium dense. Grades light gray. Wet.	22	38	38	"
			23	2	23	"
113			24	-	-	Too wet to collect sample.
118			25	-	-	"
123						"
		End of Borehole				
128						
133						
138						
143						

Volatile Organic Concentration

Parts Per Million (ppm)

100 300 500 700 900

Drill Method: H/S Auger

Drill Date: 3/21/05

Hole Size: 8"

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GEO TRACKER ID:T603900177

Drilled by: CME-75

Engineer: Zaki Niaz

P.M. 11.80

Log of Test Boring: MW-8

Project No: 17-99015
Project: Harmin's Liquor
Location: Madera, CA
Depth to Water (Initial): 110'

Figure: A-4
Logged By: S.B.
Client: Amrik Gill
Depth to Water (Completion): 110'

SUBSURFACE PROFILE			SAMPLE			Volatile Organic Concentration Parts Per Million (ppm) 100 300 500 700 900	Notes
Depth	Symbol	Description	Number	OVM	Blows/Foot		
		Silty Sand (SM) Grades loose. Brown; moist; fine to medium grained; gravel particles; loose.					
54							
59							
64		Grades fine grained.					
69							
74							
79							
84							
89							
94							

Drill Method: H/S Auger
Drill Date: 3/23/05
Hole Size: 8"

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GEO TRACKER ID:T603900177

Drilled by: CME-75
Sheet: 2 of 3
Engineer: Zaki Niaz
P.M. 11.80

Log of Test Boring: MW-8

Project No: 17-99015

Project: Harmin's Liquor

Location: Madera, CA

Depth to Water (Initial): 110'

Figure: A-4

Logged By: S.B.

Client: Amrik Gill

Depth to Water (Completion): 110'

SUBSURFACE PROFILE			SAMPLE			Volatile Organic Concentration Parts Per Million (ppm) 100 300 500 700 900	Notes
Depth	Symbol	Description	Number	OVM	Blows/Foot		
103							
108							
		End of Borehole					
113							
118							
123							
128							
133							
138							
143							

Drill Method: H/S Auger

Drill Date: 3/23/05

Hole Size: 8"

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Fresno, CA. 93722
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e-mail: asrengineering@sbcglobal.net

GEO TRACKER ID:T603900177

Drilled by: CME-75

Engineer: Zaki Niaz

P.M. 11.80

Log of Test Boring: MW-7

Project No: 17-99015
Project: Harmin's Liquor
Location: Madera, CA
Depth to Water (Initial): 110'

Figure: A-4
Logged By: S.B.
Client: Amrik Gill
Depth to Water (Completion): 110'

SUBSURFACE PROFILE			SAMPLE			Volatile Organic Concentration Parts Per Million (ppm) 100 300 500 700 900	Notes
Depth	Symbol	Description	Number	OVM	Blows/Foot		
		Ground Surface					
0		*Silty Sand (SM)* Yellow brown; fine to medium grained; fill material					
5							
		Silty Sand (SM) Yellow brown; cemented; no odor					
10							
15							
20							
25							
30							
35		*Sand (SP)* Olive brown; moist; fine to medium grained					
40							
45		*Sandy Silt (ML)* Olive green; moist to wet; trace of clay					

Drill Method: H/S Auger
Drill Date: 3/23/05
Hole Size: 8"

ASR Engineering, Inc.
3629 W. Gettysburg Ave.
Fresno, CA. 93722
phone: (559) 271-5260
fax: (559) 271-5267
e-mail: asrengineering@sbcglobal.net

GEO TRACKER ID:T603900177

Drilled by: CME-75
Sheet: 1 of 3
Engineer: Zaki Niaz

P.M. 11.80

Log of Test Boring: MW-7

Project No: 17-99015
Project: Harmin's Liquor
Location: Madera, CA
Depth to Water (Initial): 110'

Figure: A-4
Logged By: S.B.
Client: Amrik Gill
Depth to Water (Completion): 110'

SUBSURFACE PROFILE			SAMPLE			Volatile Organic Concentration Parts Per Million (ppm) 100 300 500 700 900	Notes
Depth	Symbol	Description	Number	OVM	Blows/Foot		
		Sandy Silt (ML) Olive green; moist to wet; trace of clay					
54		***Sand (SP)*** Olive green; moist; fine to medium grained					
59							
64							
		Silty Sand (SM) Grey; fine grained					
69							
		Sand (SP) Grey; fine grained					
74							
79							
84							
89							
94							
		Sand (SP) Grey; moist; fine to medium grained					

Drill Method: H/S Auger
Drill Date: 3/23/05
Hole Size: 8"

ASR Engineering, Inc.
3629 W. Gettysburg Ave.
Fresno, CA. 93722
phone: (559) 271-5260
fax: (559) 271-5267
e-mail: asrengineering@sbcglobal.net
GEO TRACKER ID:T603900177

Drilled by: CME-75

Engineer: Zaki Niaz
P.M. 11.80

Log of Test Boring: MW-7

Project No: 17-99015
Project: Harmin's Liquor
Location: Madera, CA
Depth to Water (Initial): 110'

Figure: A-4
Logged By: S.B.
Client: Amrik Gill
Depth to Water (Completion): 110'

SUBSURFACE PROFILE			SAMPLE			Volatile Organic Concentration Parts Per Million (ppm) 100 300 500 700 900	Notes
Depth	Symbol	Description	Number	OVM	Blows/Foot		
103, 108, 113		*Sand (SP)* Grey; moist; fine to medium grained					
118, 123, 128, 133, 138, 143		End of Borehole					

Drill Method: H/S Auger	ASR Engineering, Inc. 3629 W. Gettysburg Ave. Fresno, CA. 93722 phone: (559) 271-5260 fax: (559) 271-5267 e-mail: asrengineering@sbcglobal.net	**Drilled by:** CME-75
Drill Date: 3/23/05		**Sheet: 3 of 3**
Hole Size: 8"	**GEO TRACKER ID:T603900177**	**Engineer:** Zaki Niaz **P.M. 11.80**

Log of Test Boring: SVMP#1

Project No: 17-99015
Project: Harmin's Liquor
Location: Madera, CA
Depth to Water (Initial):

Figure: A-2
Logged By: A.G.
Client: Mr. Amrik Gill
Depth to Water (Completion):

SUBSURFACE PROFILE			SAMPLE			Volatile Organic Concentration Parts Per Million (ppm) 50 150 250	Notes
Depth	Symbol	Description	Number	OVM	Blows/Foot		
		Ground Surface					
0		***Silty Sand (SM)*** Dark brown; moist; fine grained					
5							
			1	0	-		
10		***Sandy Clay (CL)*** Brown; moist	2	0	-		
		Grades dark brown					
		Grades olive gray between 14' and					
15			3	0	-		
		End of Borehole					
20							
25							

Drill Method: Geoprobe 66 DT

Drill Date: 7/18/08

Hole Size: 2.5"

ASR Engineering, Inc.
3629 W. Gettysburg Ave.
Fresno, CA. 93722
phone: (559) 271-5260
fax: (559) 271-5267
e-mail: asrengineering@sbcglobal.net
GEO TRACKER ID:T603900177

Drilled by: Soilprobe Inc

Sheet: 1 of 1

Engineer: ASR

P.M. 11.80

Log of Test Boring: SVMP#2

Project No: 17-99015
Project: Harmin's Liquor
Location: Madera, CA
Depth to Water (Initial):

Figure: A-3
Logged By: A.G.
Client: Mr. Amrik Gill
Depth to Water (Completion):

SUBSURFACE PROFILE			SAMPLE			Volatile Organic Concentration Parts Per Million (ppm) 50 150 250	Notes
Depth	Symbol	Description	Number	OVM	Blows/Foot		
0		Ground Surface					
0–10		***Silty Sand (SM)*** Brown; moist; fine grained	1	0	-		
10–12.5		***Sandy Clay (CL)*** Dark brown; moist					
12.5–15		***Clayey Sand (SC)*** Dark brown; moist fine grained; 1' layer	2	0	-		
15–16.5		***Sandy Clay (CL)*** Dark borwn; moist	3	0	-		
		End of Borehole					

Depth scale: 0, 5, 10, 15, 20, 25

Drill Method: Geoprobe 66 DT
Drill Date: 7/18/08
Hole Size: 2.5"

ASR Engineering, Inc.
3629 W. Gettysburg Ave.
Fresno, CA. 93722
phone: (559) 271-5260
fax: (559) 271-5267
e-mail: asrengineering@sbcglobal.net

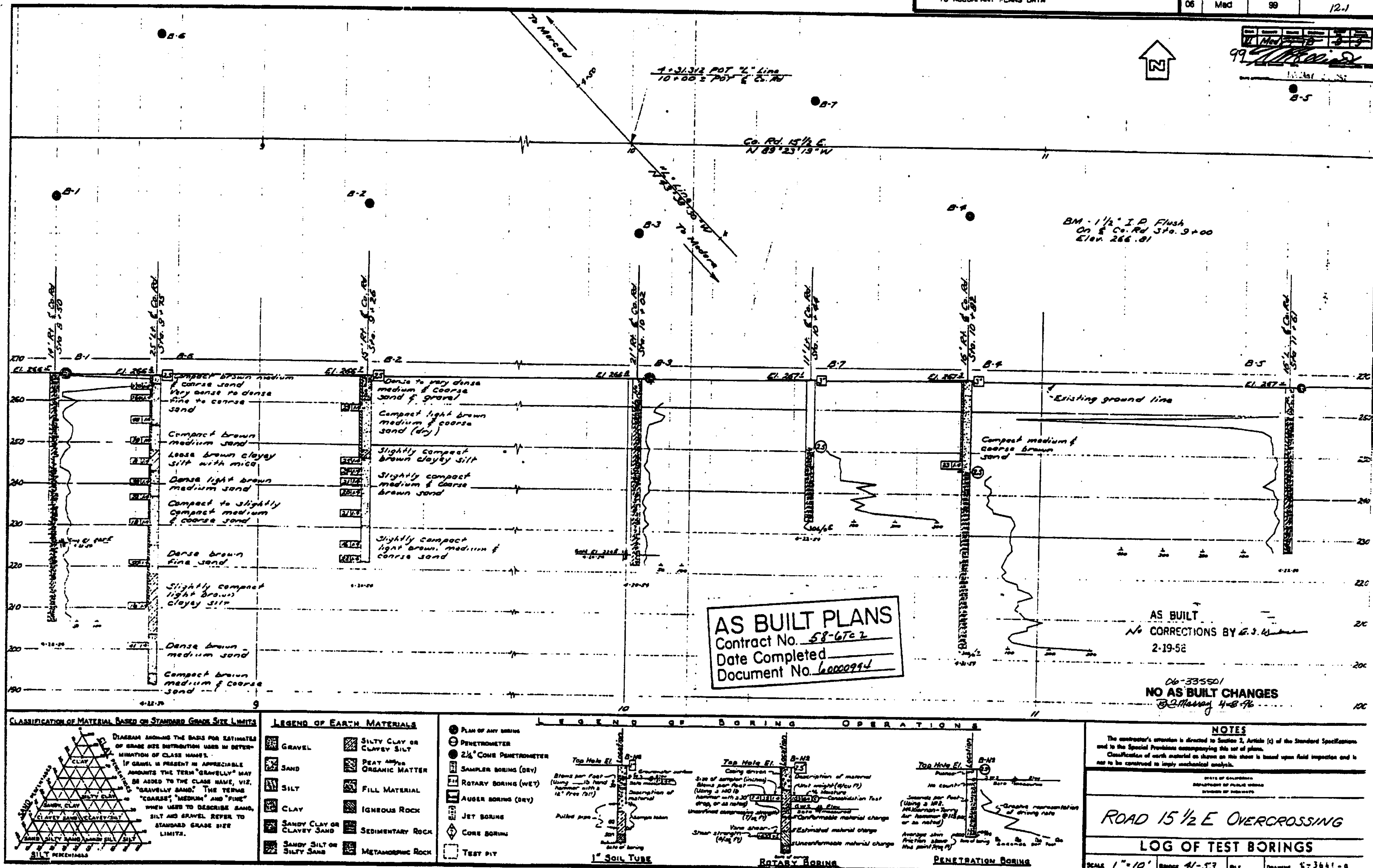
GEO TRACKER ID:T603900177

Drilled by: Soilprobe Inc
Sheet: 1 of 1
Engineer: ASR

P.M. 11.80

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	12.1	51	54

TO ACCOMPANY PLANS DATED



AS BUILT PLANS
Contract No. 58-6TC2
Date Completed
Document No. 60000994

AS BUILT
No CORRECTIONS BY
2-19-58

06-335501
NO AS BUILT CHANGES
4-8-96

NOTES

The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans. Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

ROAD 15 ½ E OVERCROSSING

LOG OF TEST BORINGS

SCALE 1" = 10' | BRIDGE 41-53

DESIGN OVERSIGHT 6-20-94

SIGN OFF DATE

NOTE:
ADDITIONAL AS-BUILT FOUNDATION DATA MAY BE AVAILABLE AT THE DIVISION OF NEW TECHNOLOGY, MATERIAL AND RESEARCH, 5900 FOLSOM BOULEVARD, SACRAMENTO, CALIFORNIA 95819

DESIGN | DETAILS | QUANTITIES | BY | CHECKED

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STEVE THOMAN
PROJECT ENGINEER

BRIDGE NO. 41-53
POST MILE 12.1

CLEVELAND AVENUE OC (WIDEN)
AS-BUILT LOG OF TEST BORINGS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 06-203
EA 335501

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 14 OF 14

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	12.1	60	54

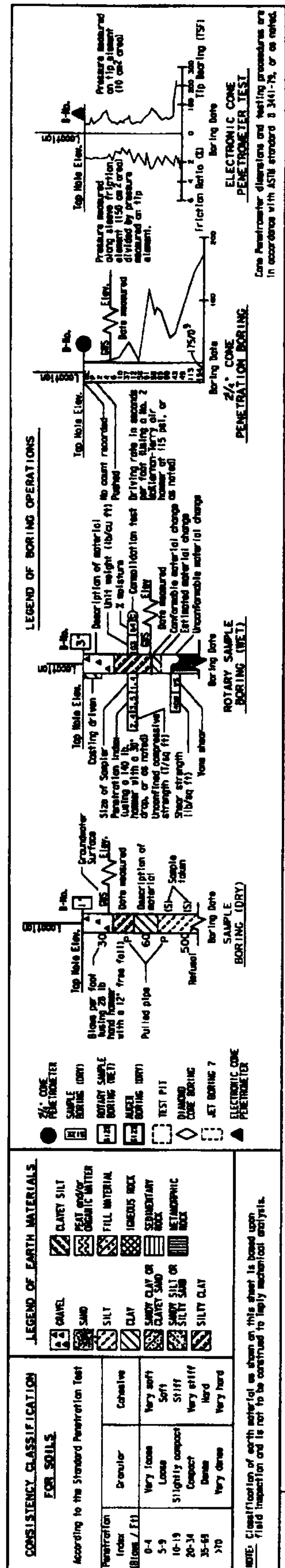
REGISTERED CIVIL ENGINEER

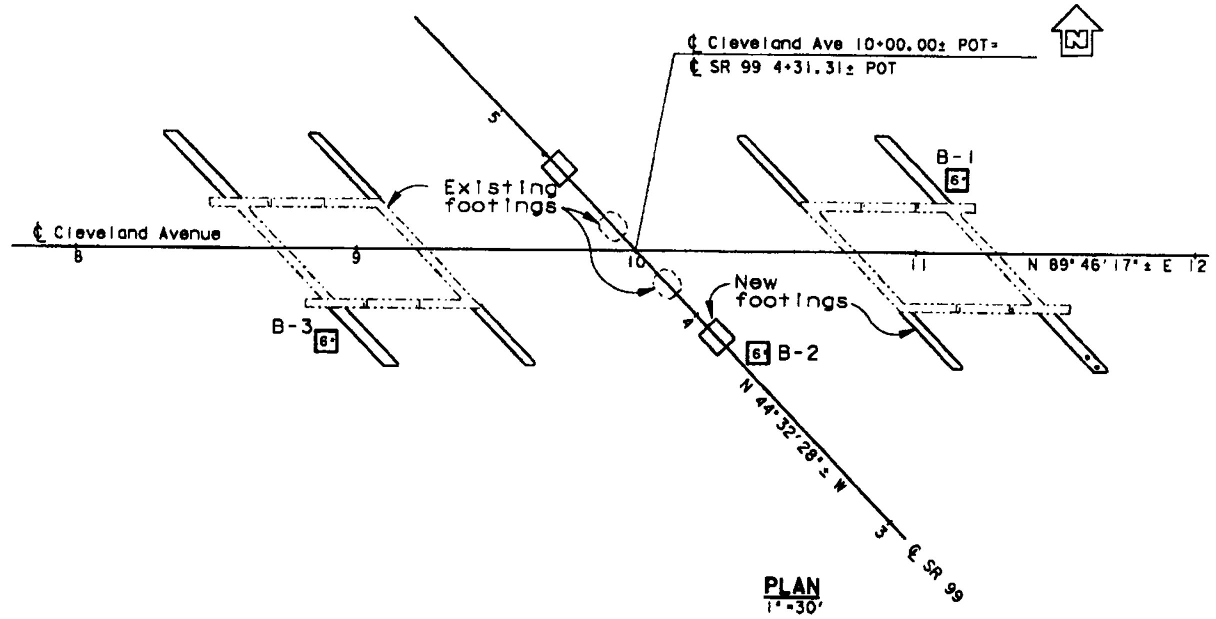
OCT 11 1994

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER ELIZABETH M. SMITH No. C-04851 Exp. 06-30-95 CIVIL STATE OF CALIFORNIA

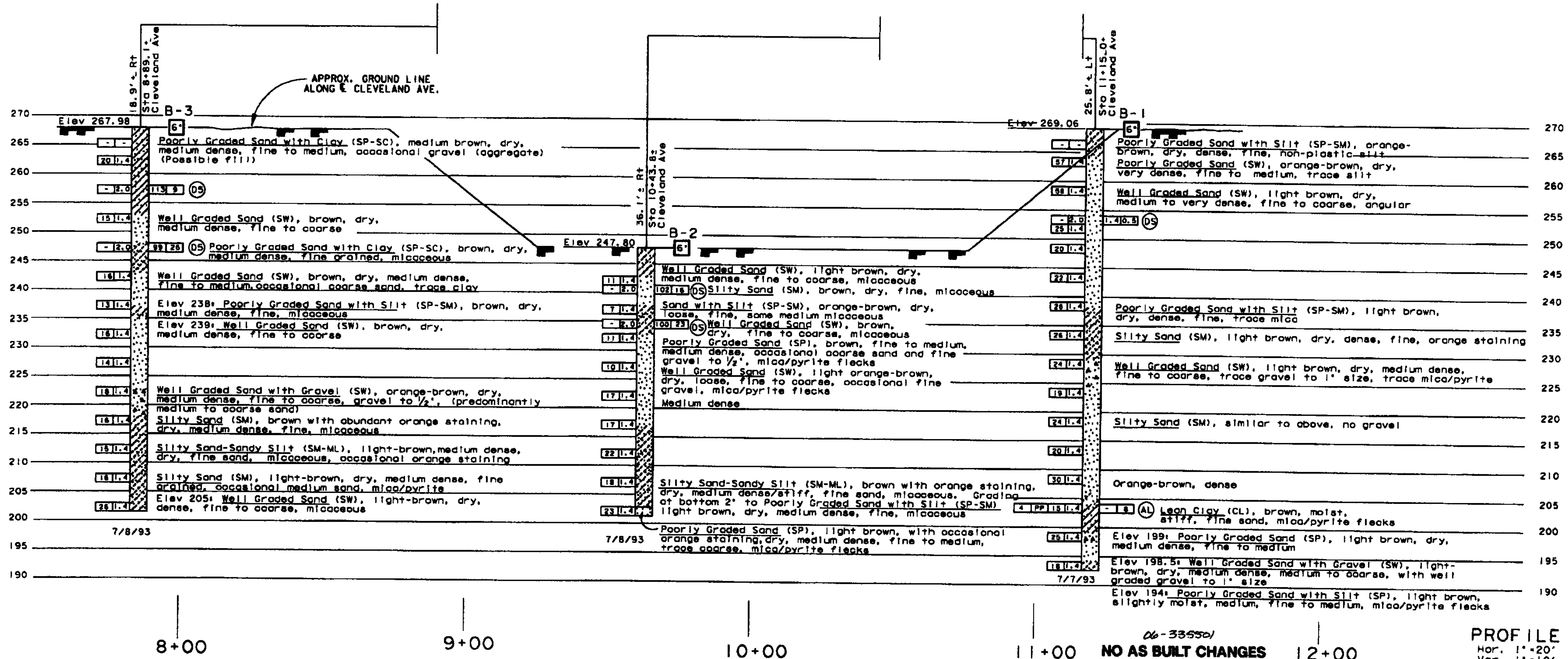
CH2M HILL
2485 NATOMAS PARK DRIVE
SACRAMENTO, CA 95833





Notes:
1. The boring logs and related information represent the opinion of the geotechnical engineer as to the character of the material at the locations shown. Soil and groundwater conditions between adjacent test holes and at other locations may differ from those shown. Groundwater conditions may change with the passage of time.
2. Groundwater was not encountered in the exploration.
3. Refer to Foundation Plan for bench mark information.

Soil Test Designation
AL-Atterberg Limits
DS-Direct Shear Test
GS-Sieve Analysis



06-335501
NO AS BUILT CHANGES
BC Massey 4-8-96

DESIGN OVERSIGHT
6-20-94
SIGN OFF DATE

DRAWN BY	KEN JOHNSON	E.M. SMITH FIELD INVESTIGATOR
CHECKED BY	E.M. SMITH	DATE 7/8/93

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

STEVE THOMAN
PROJECT ENGINEER

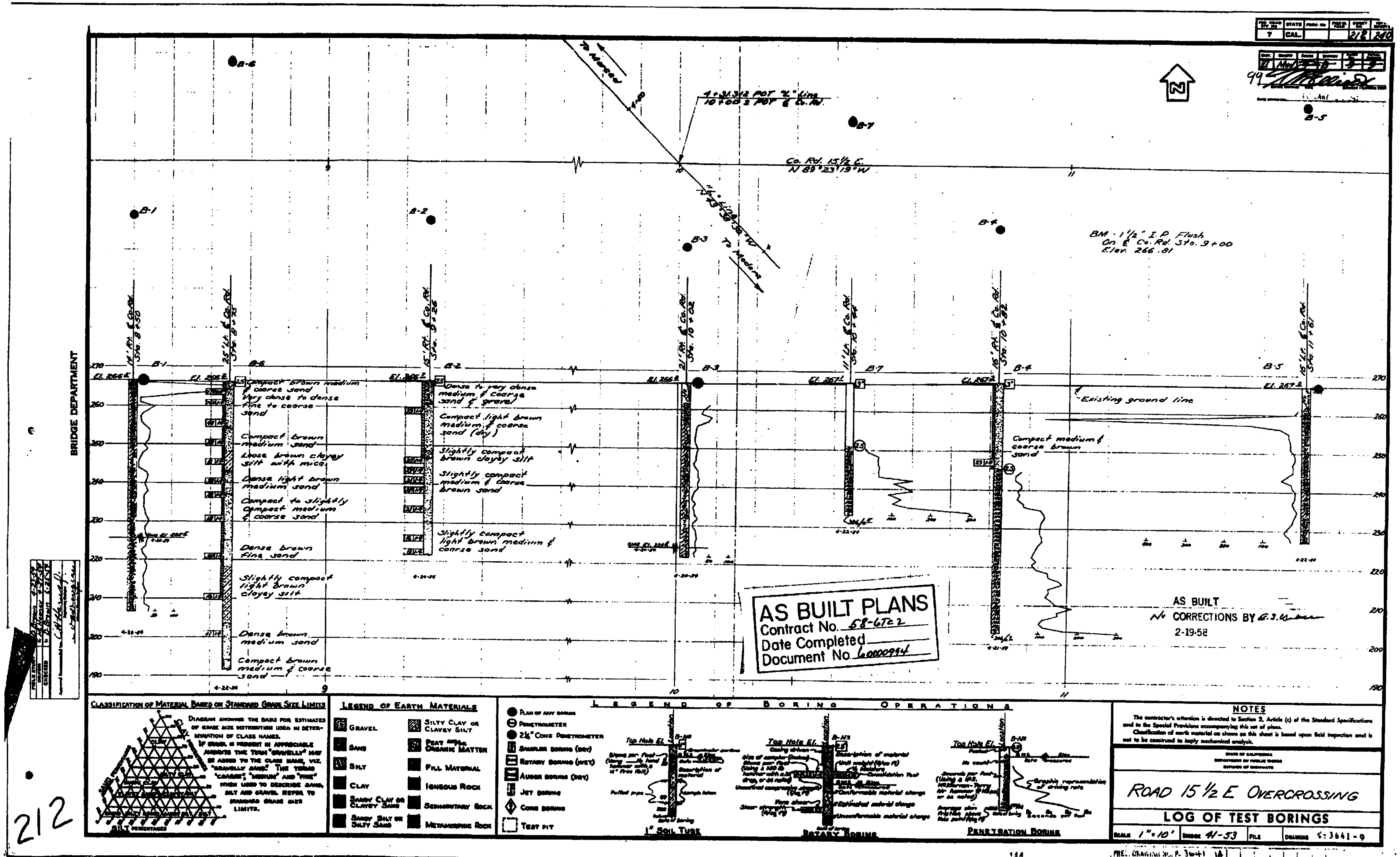
BRIDGE NO. 41-53
POST MILE 12.1

CLEVELAND AVENUE OC (WIDEN)
LOG OF TEST BORINGS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 06-203
EA 335501

DISREGARD PRINTS BEARING EARLIER REVISION DATES →
REVISION DATES (PRELIMINARY STAGE ONLY): 10-Jun-1994
SHEET 13 OF 14



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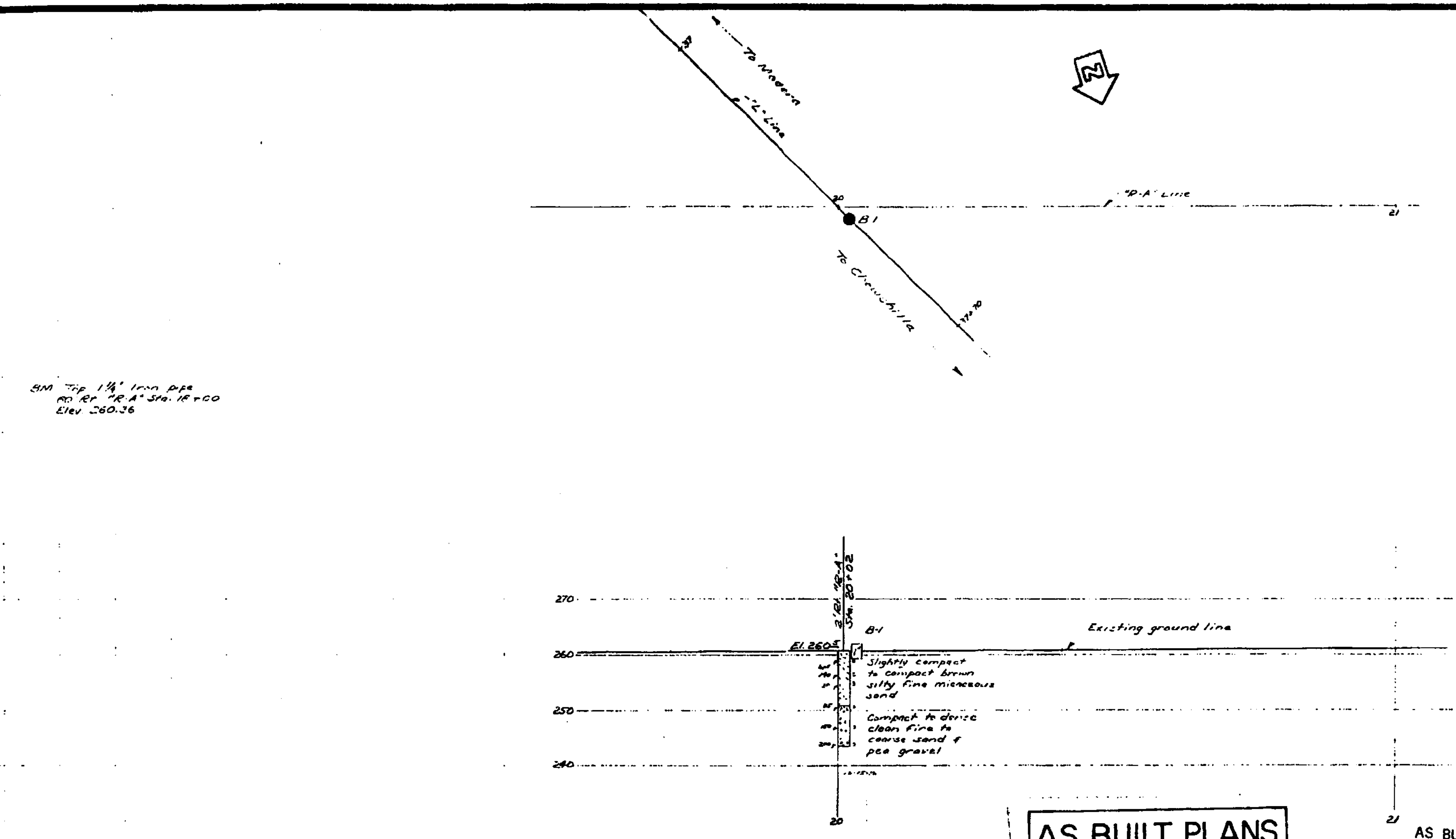
DATE 9/15/71 SIGNATURE [illegible] TITLE HAC II

Dist.	State	Proj. No.	Fiscal Year	Sheet No.	Total Sheets
7	CAL.			240	240

Dist.	County	Route	Section	Sheet No.	Total Sheets
VII	Mad		6	14	14



BRIDGE DEPARTMENT

AS BUILT PLANS
Contract No. 58-6Tc2
Date Completed
Document No. 60000994

AS BUILT
CORRECTIONS BY E.S.
2-19-58

CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

Diagram showing the basis for estimates of grade size distribution used in determination of class names. If gravel is present in appreciable amounts the term "gravelly" may be added to the class name, viz. "gravelly sand". The terms "coarse", "medium" and "fine" when used to describe sand, silt and gravel, refer to standard grade size limits.

LEGEND OF EARTH MATERIALS

Gravel · Sand · Silt · Clay · Sandy Clay or Clayey Sand · Sandy Silt or Silty Sand · Silty Clay or Clayey Silt · Peat and/or Organic Matter · Fill Material · Igneous Rock · Sedimentary Rock · Metamorphic Rock

LEGEND OF BORING OPERATIONS

Plan of any boring · Penetrometer · 2½" Cone Penetrometer · Sampler boring (dry) · Rotary boring (wet) · Auger boring (dry) · Jet boring · Core boring · Test pit

1" Soil Tube · Rotary Boring · Penetration Boring

NOTES

The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans.

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

AVENUE 16 OVERCROSSING

LOG OF TEST BORINGS

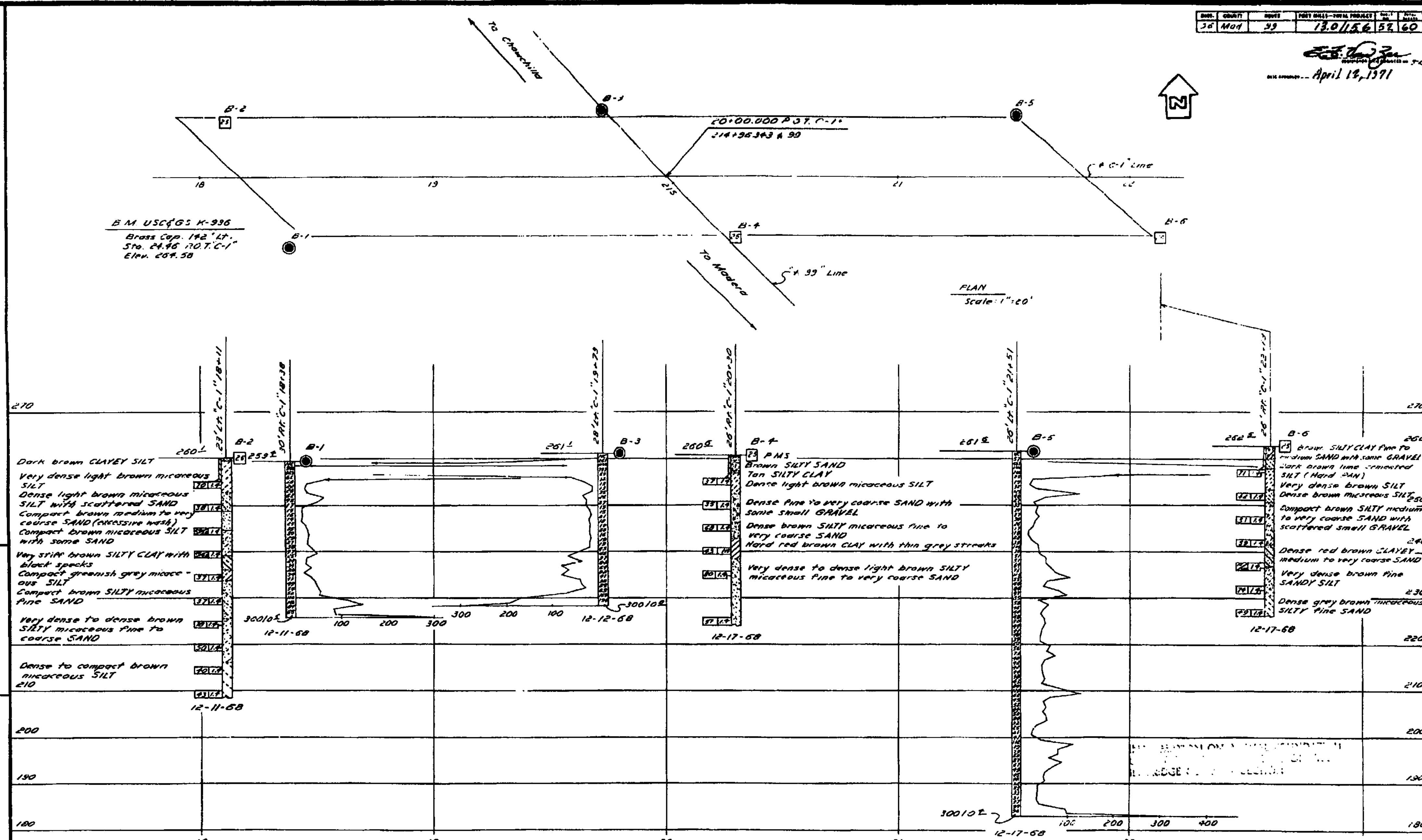
SCALE 1" = 10'	BRIDGE 41-58	FILE	DRAWING C-5121-14

240

178

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE 9/15/71 SIGNATURE W. J. Kell TITLE HAC II



NO GROUND WATER ENCOUNTERED DURING THIS INVESTIGATION BY BRIDGE DEPT. GEOLOGY SECTION DATE Dec. 1968

DIST.	COUNTY	ROUTE	POST MILES—TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	13.0/15.6	52	60

April 12, 1971

STATE OF CALIFORNIA
TRANSPORTATION AGENCY
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

AVENUE 17 OVERCROSSING

LOG OF TEST BORINGS

BRIDGE NO. 41-68

SHEET 11 OF 11

BRIDGE DEPARTMENT
ENGINEERING GEOLOGY SECTION

LEGEND OF BORING OPERATIONS

LEGEND OF EARTH MATERIALS

NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

AS BUILT PLANS
Contract No. 06-023024
Date Completed 04-12-71
Document No. 60002018

WO 023001
CU 06202 PR 4168-2

52

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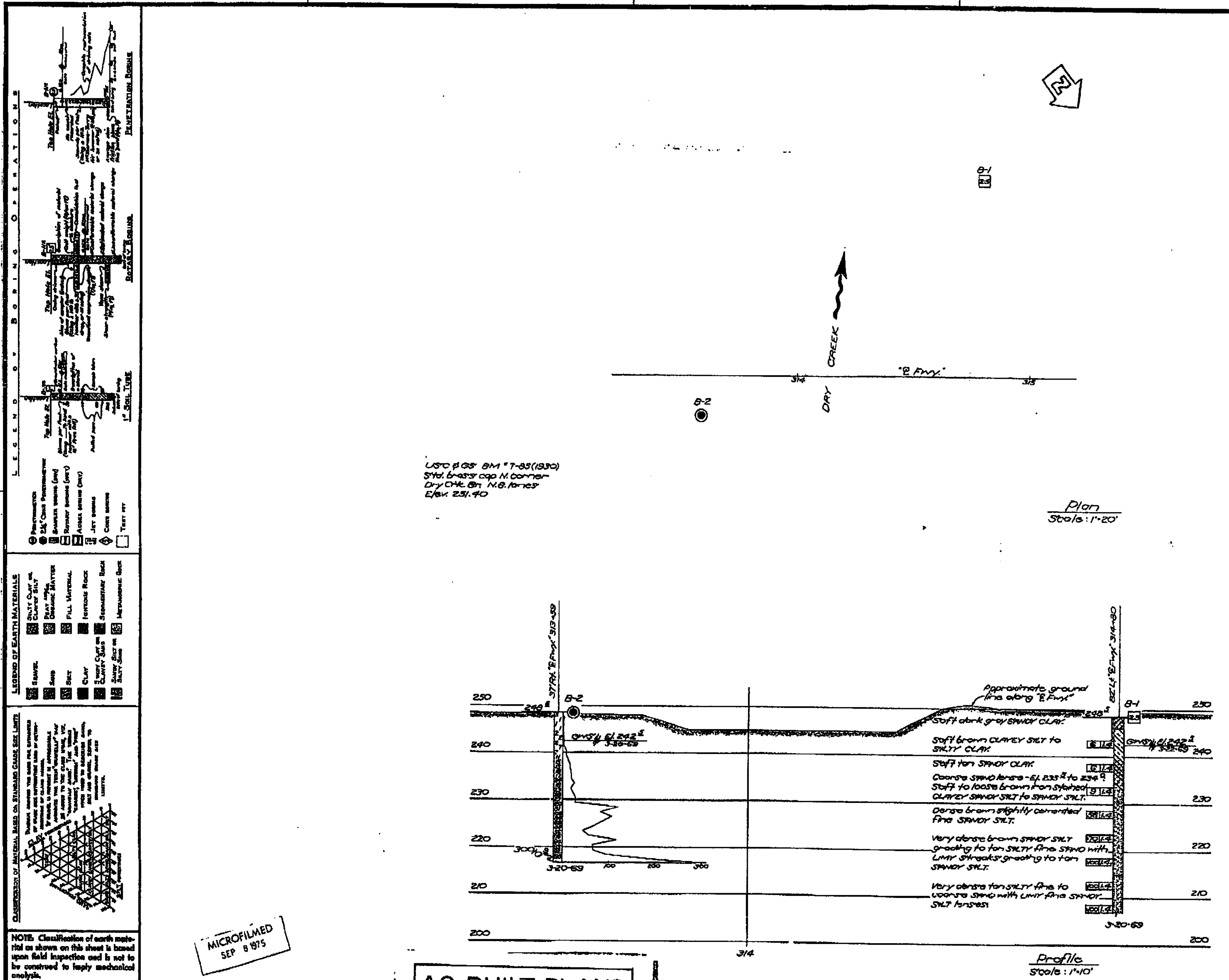


DIST.	COUNTY	ROUTE	POST MILES—TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	15.6/17.8	50	70

September 11, 1973

AS BUILT No Changes
CORRECTIONS BY R. Arie
CONTRACT NO. 06-023034
DATE 05/19/75
JRMy 08-29-75

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DRY CREEK BRIDGE

LOG OF TEST BORINGS

BRIDGE NO. 41-05 R/L | POST MILE | DRAWING NO. | SHEET 6 OF 6

WO - CU PR4105-2

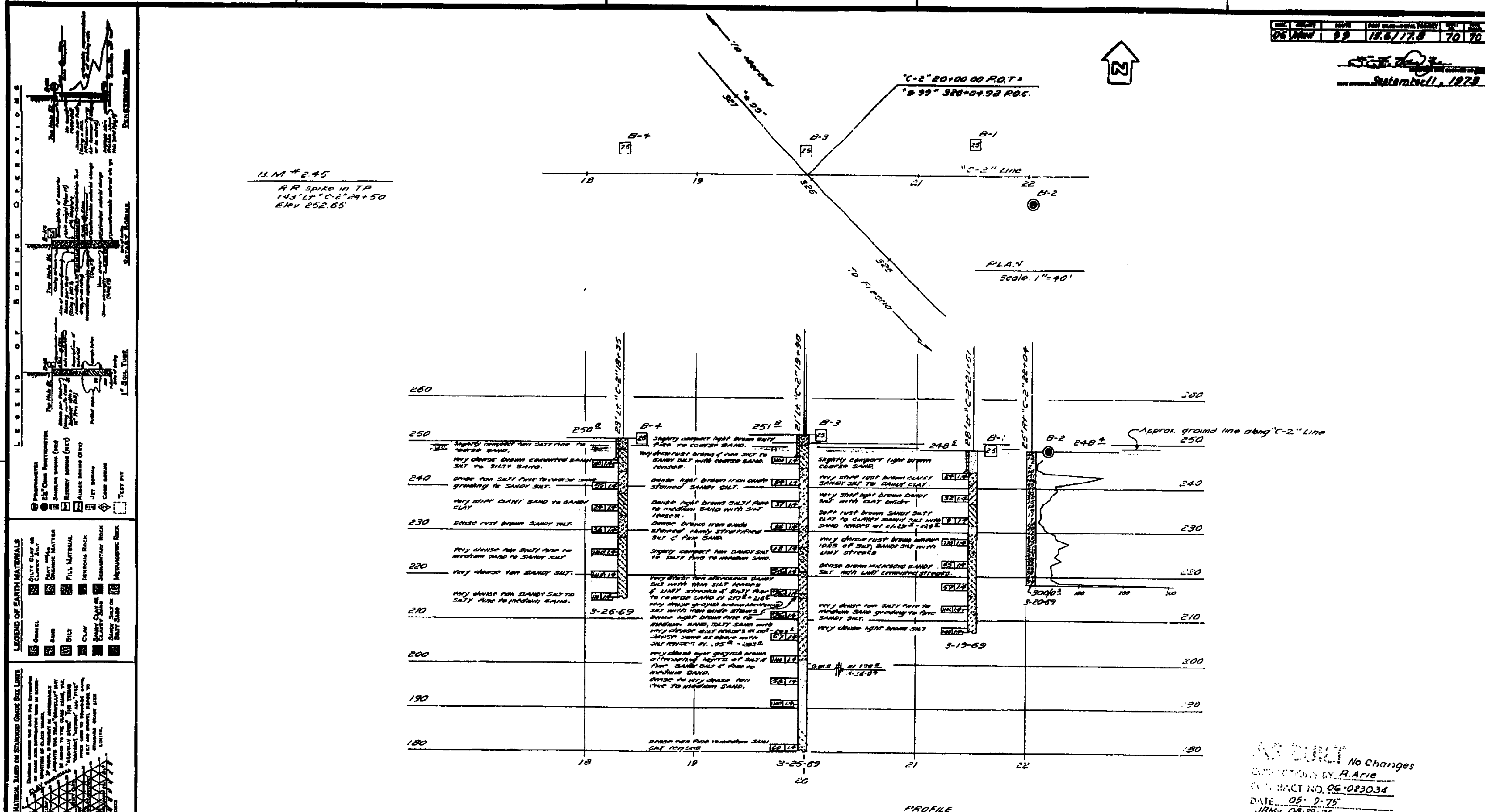
MICROFILMED SEP 8 1975

AS BUILT PLANS
Contract No. 06-023034
Date Completed 5-5-75
Document No. 60006593

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF TRANSPORTATION.

9-8-75

50



AS BUILT No Changes
BY R. Arie
CONTRACT NO. 06-023034
DATE 05-2-75
JRMy 08-29-75

DIST	COUNTY	ROUTE	POST MILES	SHEET NO.	TOTAL SHEETS
06	Mad	99	15.6/17.8	70	70

September 11, 1973

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

AVENUE 18 1/2 OVERCROSSING

LOG OF TEST BORINGS

BRIDGE NO. 41-69 | POST MILE 16.3 | SHEET 11 OF 11

WO CU PR 4169-2

AS BUILT PLANS
Contract No. 06-023034
Date Completed 5-5-75
Document No. 60006598

MICROFILMED SEP 8 1975

70

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF TRANSPORTATION.
9-8-75

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	28.2/R29.3	42	43

CERTIFIED ENGINEER GEOLOGIST

4-13-98

PLANS APPROVAL DATE

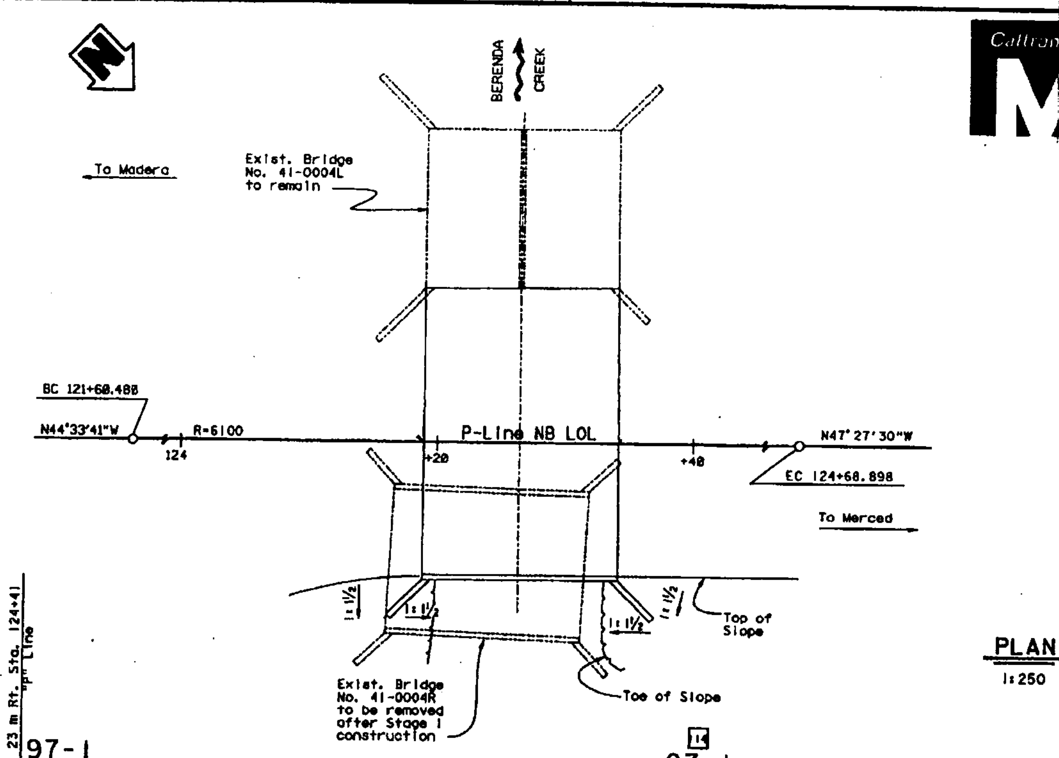
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

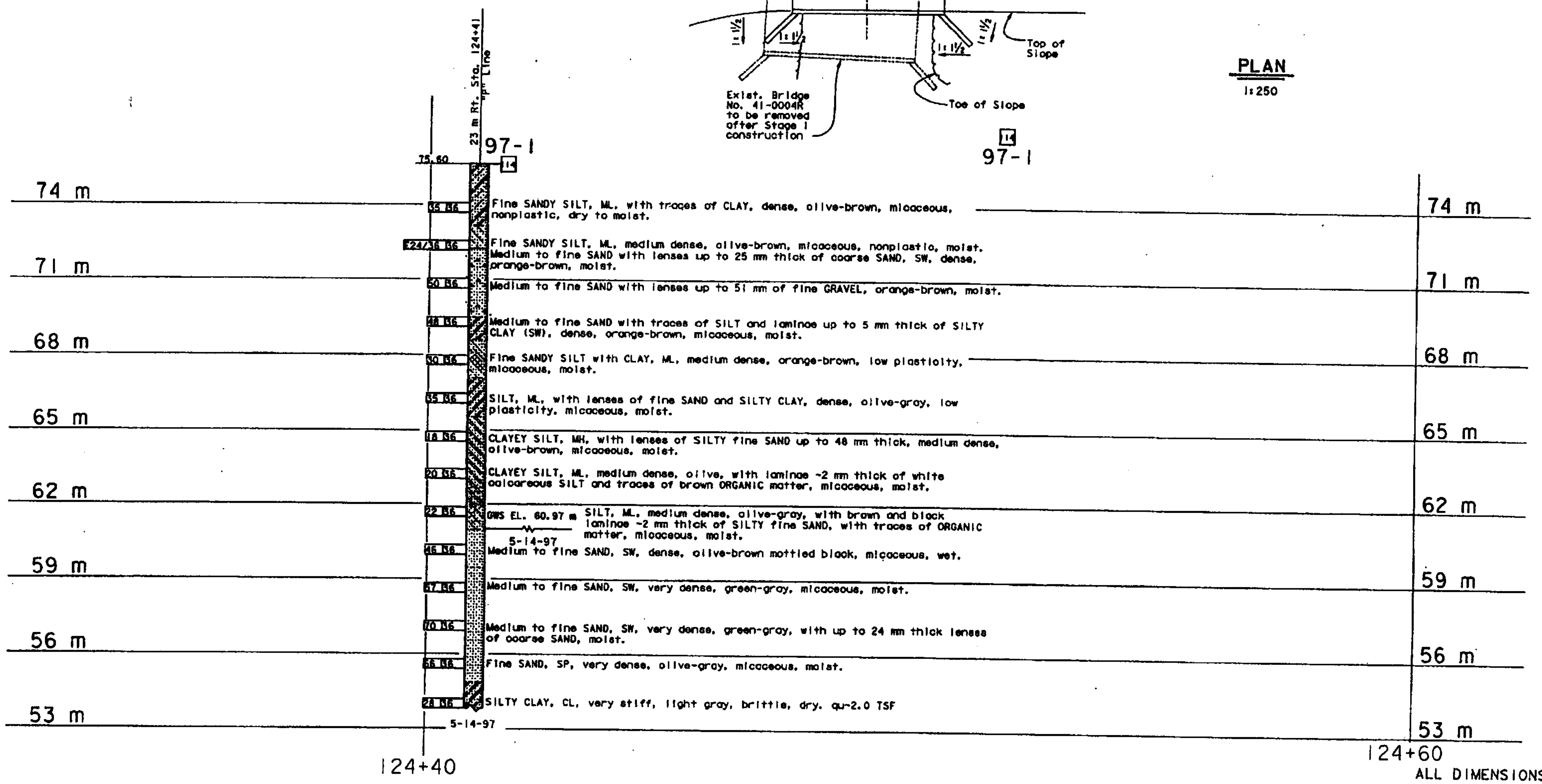
REGISTERED GEOLOGIST R. W. FOX No. 78 Exp. 8-31-99 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

Caltrans Metric

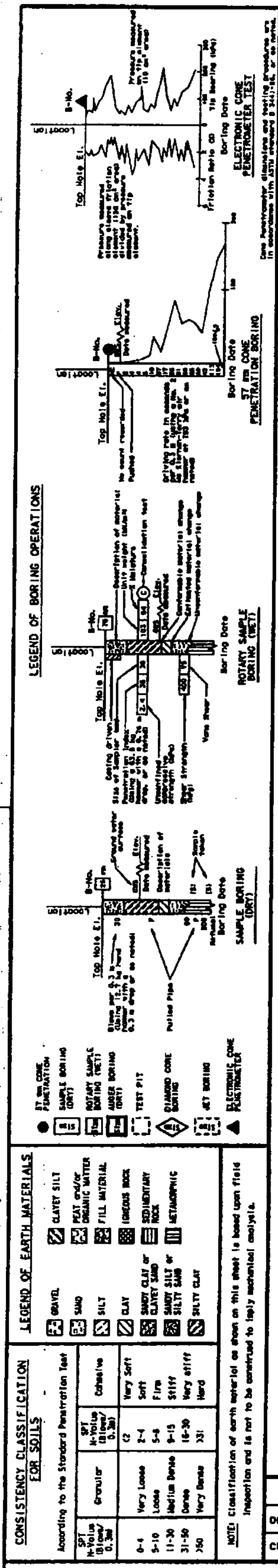
BENCH MARK

Brass nail in wooden deck Point-2
3.87 m left Sta. 124+36 "P" Line
ELEV. 74.804 m





ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN



ENGINEERING SERVICE CENTER	STRUCTURE FOUNDATIONS	FIELD INVESTIGATION BY:	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES STRUCTURE DESIGN	BRIDGE NO. 41-0004	BERENDA CREEK BRIDGE (WIDEN)
DRAWN BY K. Wahl 9/97		B. Komorniczak		CU 06222	KILOMETER POST 17.5	LOG OF TEST BORINGS 1 OF 2
CHECKED BY				EA 336001		SHEET 10 OF 11

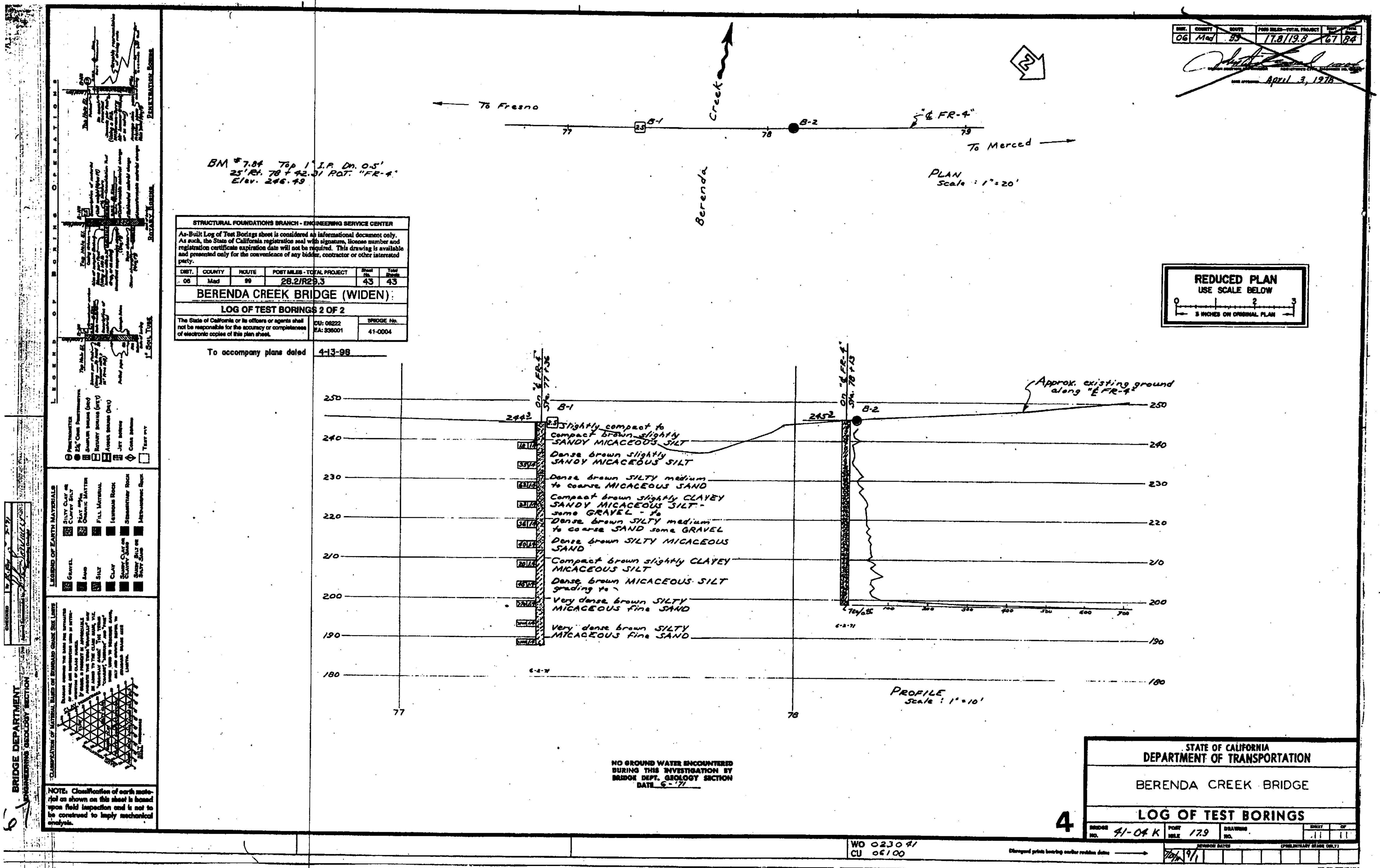
OSF GEOLOGIST LOG OF TEST BORINGS SHEET (METRIC) (REV. 8/18/97)

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

DISREGARD PRINTS BEARING EARLIER REVISION DATES

FILE => /home/tsbpci/projects/06_336001be/berenda_ok.dgn

DATE PLOTTED => 25 OCT 97 TIME PLOTTED => 11:26:36 USERNAME => tsbpci

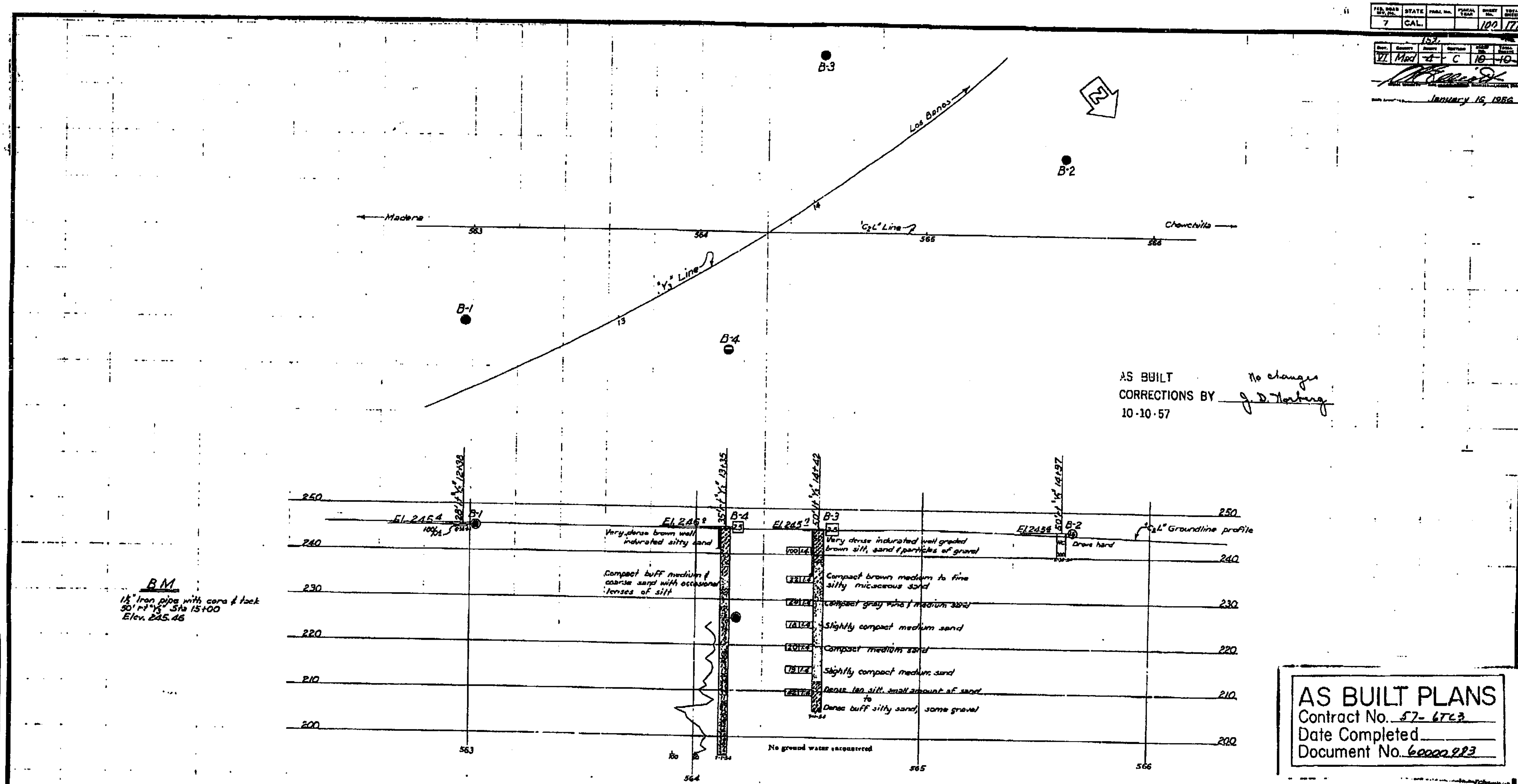


THIS IS A COPY

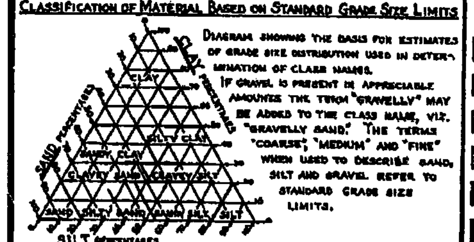
Fed. Road Dist. No.	State	Fed. Aid Proj. No.	Fiscal Year	Sheet No.	Total Sheets
7	CAL.			100	177

Dist.	County	Route	Section	Sheet No.	Total Sheets
VI	Mad	4	C	10	10

January 16, 1956



AS BUILT PLANS
Contract No. 57-6TC3
Date Completed
Document No. 60000983



Classification of Material Based on Standard Grade Size Limits

Diagram showing the basis for estimates of grade size distribution used in determination of class names. If gravel is present in appreciable amounts the term "gravelly" may be added to the class name, viz. "gravelly sand". The terms "coarse", "medium" and "fine" when used to describe sand, silt and gravel refer to standard grade size limits.

Legend of Earth Materials

- Gravel
- Sand
- Silt
- Clay
- Sandy Clay or Clayey Sand
- Sandy Silt or Silty Sand
- Silty Clay or Clayey Silt
- Peat and other Organic Matter
- Fill Material
- Igneous Rock
- Sedimentary Rock
- Metamorphic Rock

Legend of Boring Operations

- Plan of any boring
- Penetrometer
- 2½" Cone Penetrometer
- Sampler boring (dry)
- Rotary boring (wet)
- Auger boring (dry)
- Jet boring
- Core boring
- Test pit

1" Soil Tube — Rotary Boring — Penetration Boring

NOTES

The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans.

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

ROUTE ~~32~~/4 SEPARATION

LOG OF TEST BORINGS

Scale	Bridge	File	Drawing
Horiz: 1"=20' Vert: 1"=10'	41-43		C-2186-10

PREL. DRAWING NO. P-2186 | 97

100

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE June 21, 1971 SIGNATURE [signature] TITLE Highway [illegible]

TRANSFER DATE: 08-5-2002 CONTRACT No: 06-338624
FIELD CORRECTION DATE: 09-07-2001
CORRECTIONS TRANSFERED BY: Juan Sanchez
FIELD CORRECTIONS BY: Mario Mirzai

NO AS BUILT CORRECTIONS

STRUCTURAL FOUNDATIONS BRANCH - ENGINEERING SERVICE CENTER

As-Built Log of Test Borings sheet is considered an informational document only. As such, the State of California registration seal with signature, license number and registration certificate expiration date confirm that this is a true and accurate copy of the original document. It does not attest to the accuracy or validity of the information contained in the original document. This drawing is available and presented only for the convenience of any bidder, contractor or other interested party.

DIST.	COUNTY	ROUTE	KILOMETER POST - TOTAL PROJECT	Sheet No.	Total Sheets
06	Mad	152	25J		

Michael T. Rogers 4/29/99
CERTIFIED ENGINEERING GEOLOGIST

REGISTERED GEOLOGIST — Michael T. Rogers — No. 2025 — Exp. 12-31-00 — CERTIFIED ENGINEERING GEOLOGIST — STATE OF CALIFORNIA

ROUTE 152/99 SEPARATION (WIDEN)

LOG OF TEST BORINGS 2of 2

NOTE: A COPY OF THIS LOG OF TEST BORINGS IS AVAILABLE AT OFFICE OF STRUCTURE MAINTENANCE AND INVESTIGATIONS, SACRAMENTO, CALIFORNIA

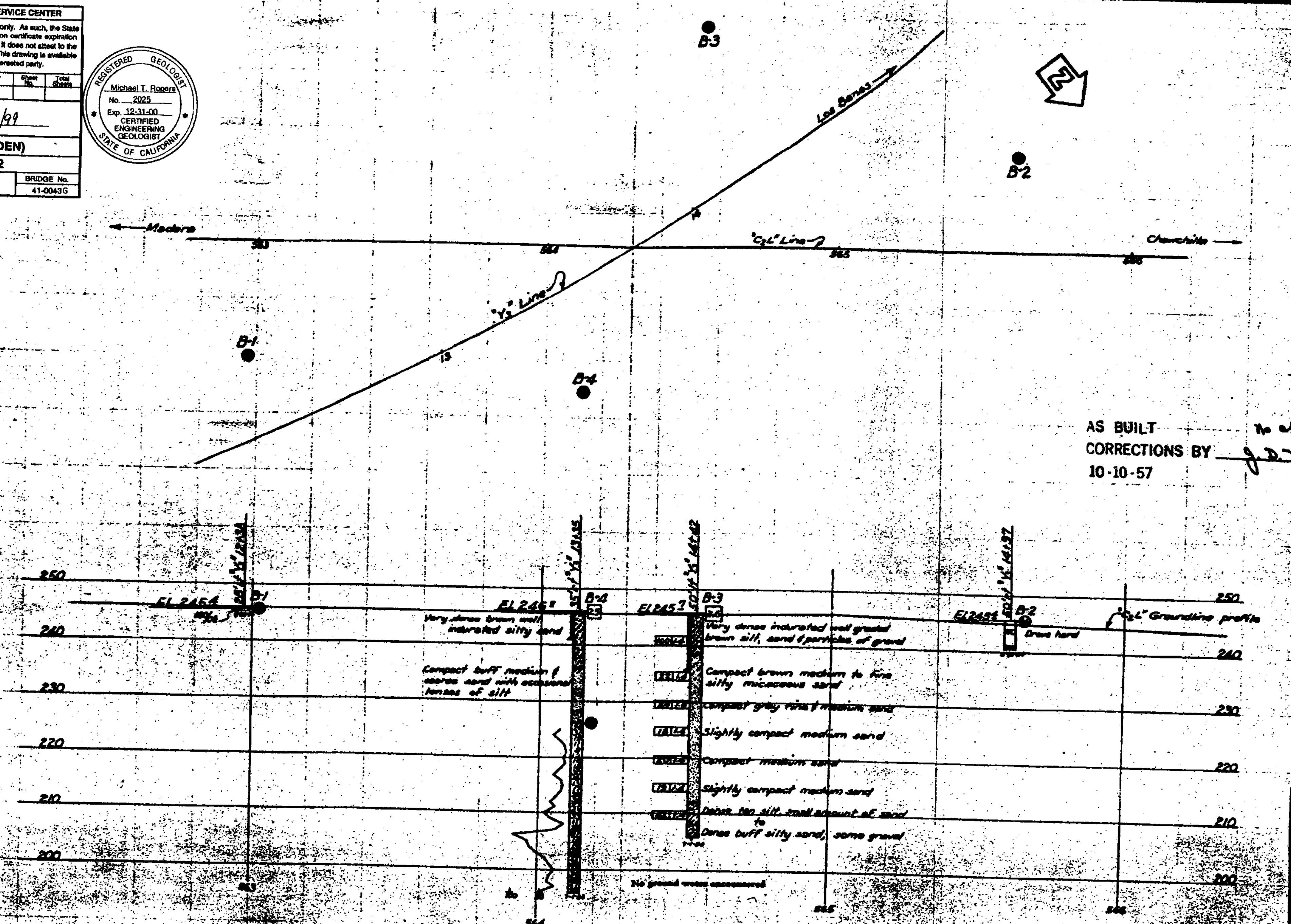
CU: 06220
EA: 338621

BRIDGE No. 41-0043G

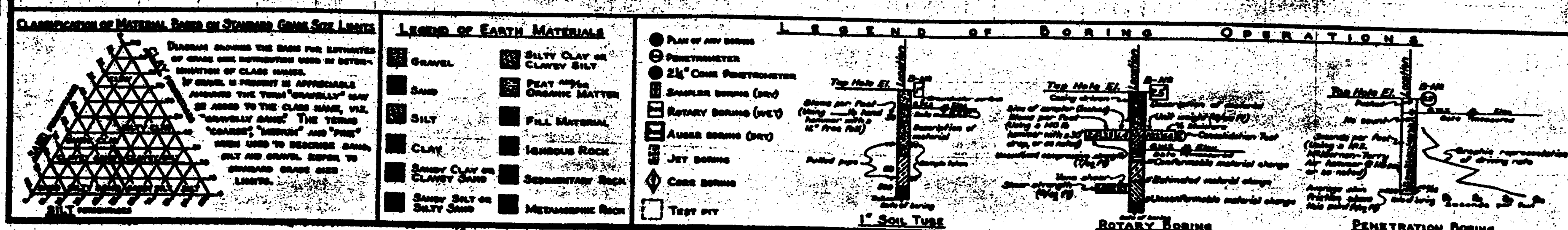
Revisions made to this Log of Test Borings from the original 1956 Log of Test Borings are:

1. New "Const." Line was added. See "General Plan" for curve data and "Foundation Plan" sheets.
2. Metric stations and offsets are as follows:

BORING	STATION	OFFSET FROM "CONS." LINE
B-1	3+78 ±	±10.0 m Lt.
B-2	4+57 ±	±15.0 m Rt.
B-3	4+41 ±	±16.0 m Lt
B-4	4+07 ±	± 9.0 m Rt.



AS BUILT
CORRECTIONS BY J. D. Harling
10-10-57
No changes



AS BUILT PLANS
Contract No. 57-6Tc3
Date Completed
Document No. 60000983

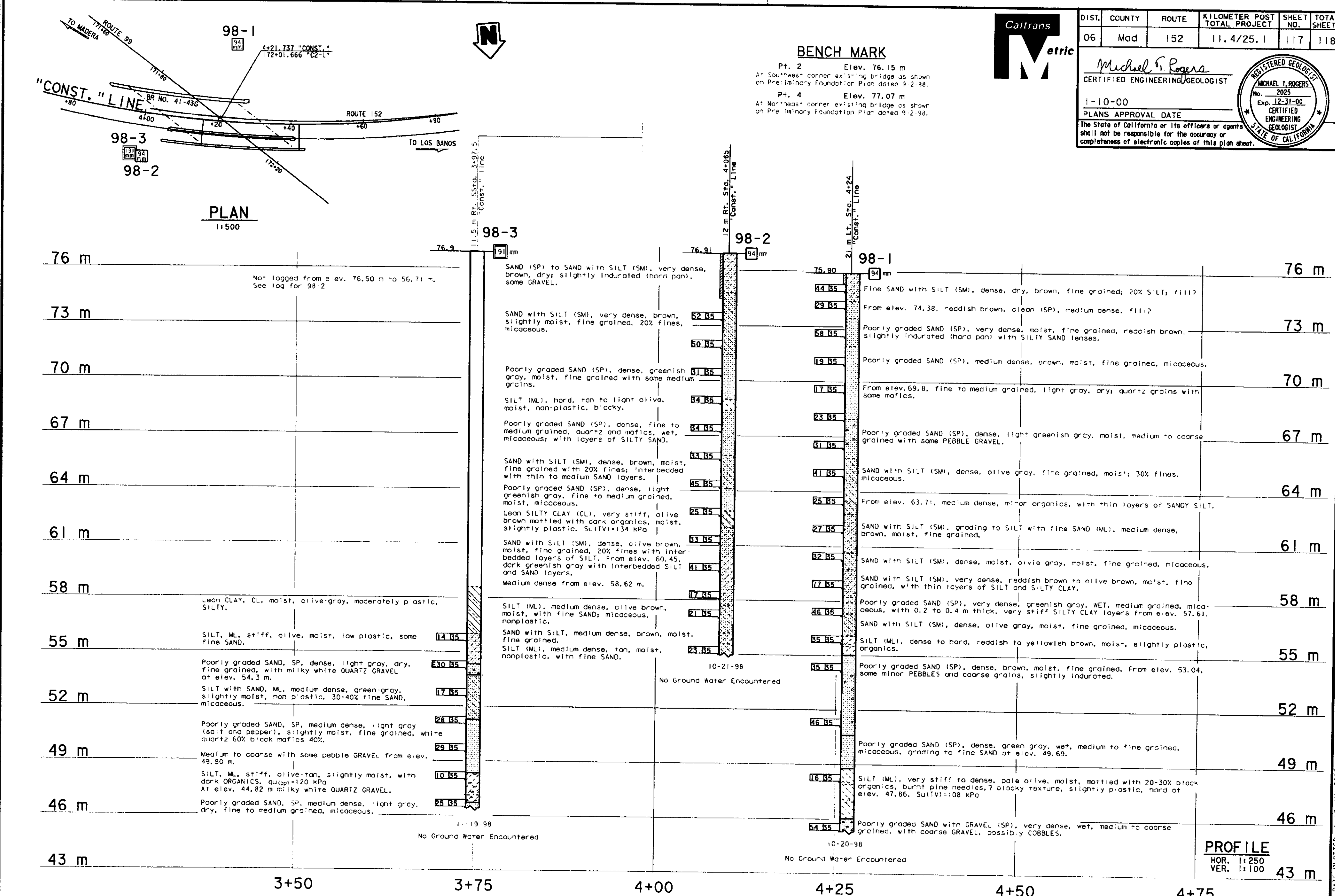
NOTES

ROUTE 32/4 SEPARATION

LOG OF TEST BORINGS

SCALE: Horiz. 1"=50' Vert. 1"=10'
Bridge 41-43
Drawing Ex 2186-10

PREL. DRAWING NO. P. 2186



NO AS BUILT CORRECTIONS

CORRECTIONS TRANSFERED BY: Juan Sanchez
FIELD CORRECTIONS BY: Mario Mirzai

TRANSFER DATE: 08-15-2002
FIELD CORRECTION DATE: 09-01-2001

CONTRACT NO: 06-338624

LEGEND OF BORING OPERATIONS

LEGEND OF EARTH MATERIALS

CONSISTENCY CLASSIFICATION FOR SOILS

NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

DIST. 06 | COUNTY Mad | ROUTE 152 | KILOMETER POST TOTAL PROJECT 11.4/25.1 | SHEET NO. 117 | TOTAL SHEETS 118

Michael T. Rogers
CERTIFIED ENGINEERING GEOLOGIST

1-10-00
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

REGISTERED GEOLOGIST — MICHAEL T. ROGERS — No. 2025 — Exp. 12-31-00 — CERTIFIED ENGINEERING GEOLOGIST — STATE OF CALIFORNIA

ENGINEERING SERVICE CENTER	STRUCTURE FOUNDATIONS	FIELD INVESTIGATION BY: M. ROGERS	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION
DRAWN BY	IRMA G-REMMEN	11/98	
CHECKED BY	M. ROGERS	11/98	

DIVISION OF STRUCTURES
STRUCTURE DESIGN

BRIDGE NO. 41-0043G
KILOMETER POST 25.1

ROUTE 152/99 SEPARATION (WIDEN)
LOG OF TEST BORINGS 1 OF 2

OSF GEOLOGIST LOG OF TEST BORINGS SHEET (METRIC) (REV. 11/18/97)

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS

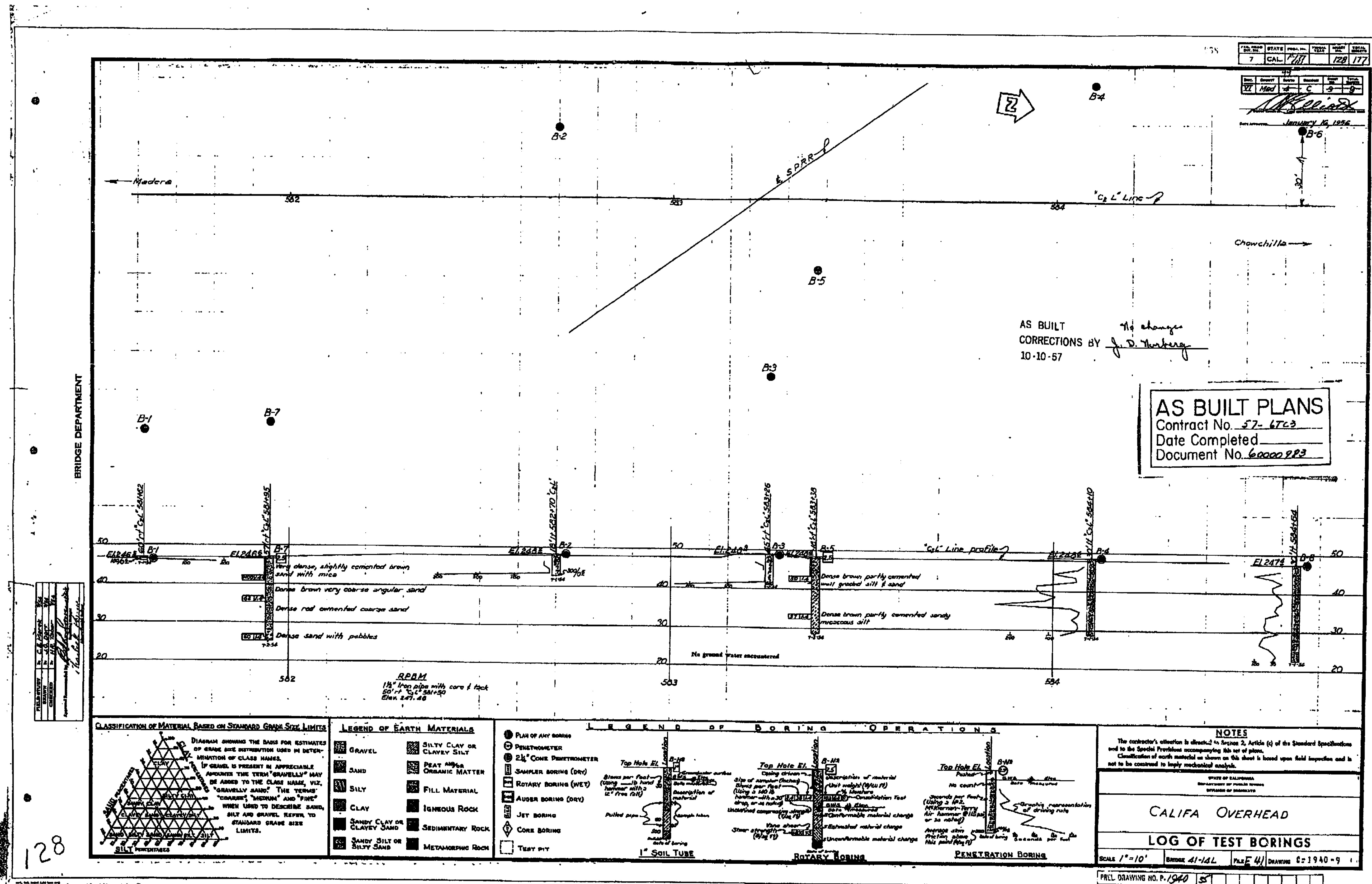
CU 06220
EA 338621

DISREGARD PRINTS BEARING EARLIER REVISION DATES

SHEET 24 OF 25

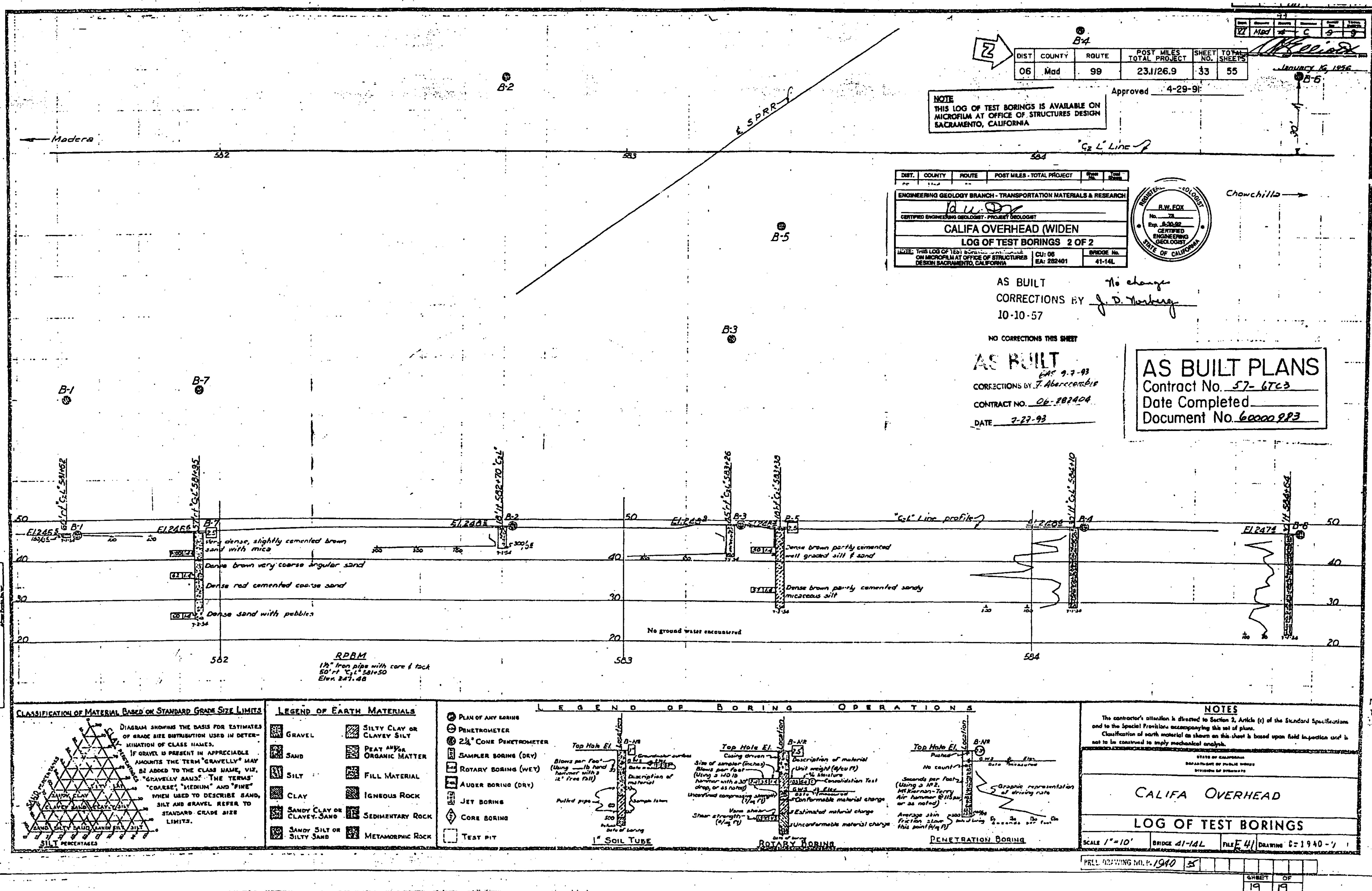
FILE => 043g_2425_lotb1.dgn

USERNAME => classett DATE PLOTTED => 16 JAN 2003 TIME PLOTTED => 09:08



I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE June 21, 1971 SIGNATURE [signature] TITLE Highway [illegible]



DIST 06 | COUNTY Mad | ROUTE 99 | POST MILES TOTAL PROJECT 23.1/26.9 | SHEET NO. 33 | TOTAL SHEETS 55
January 16, 1956
Approved 4-29-91
NOTE
THIS LOG OF TEST BORINGS IS AVAILABLE ON MICROFILM AT OFFICE OF STRUCTURES DESIGN SACRAMENTO, CALIFORNIA
← Madera
Chowchilla →
"C2 L" Line
℄ SPRR
B-1
B-2
B-3
B-4
B-5
B-6
B-7
ENGINEERING GEOLOGY BRANCH - TRANSPORTATION MATERIALS & RESEARCH
CERTIFIED ENGINEERING GEOLOGIST - PROJECT GEOLOGIST
CALIFA OVERHEAD (WIDEN
LOG OF TEST BORINGS 2 OF 2
CU: 06
EA: 282401
BRIDGE No. 41-14L
R.W. FOX
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA
AS BUILT
CORRECTIONS BY
No changes
10-10-57
NO CORRECTIONS THIS SHEET
AS BUILT
CORRECTIONS BY J. Abercrombie
CONTRACT NO. 06-282404
DATE 7-27-93
AS BUILT PLANS
Contract No. 57-6TC3
Date Completed
Document No. 60000983
"C2L" Line profile
El 246.5
El 246.6
El 248.8
El 247.4
Very dense, slightly cemented brown sand with mica
Dense brown very coarse angular sand
Dense red cemented coarse sand
Dense sand with pebbles
Dense brown partly cemented well graded silt & sand
Dense brown partly cemented sandy micaceous silt
No ground water encountered
RPBM
1½" Iron pipe with core & tack
50' rt "C2L" 581+50
Elev. 247.48
582
583
584
CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS
DIAGRAM SHOWING THE BASIS FOR ESTIMATES OF GRADE SIZE DISTRIBUTION USED IN DETERMINATION OF CLASS NAMES.
IF GRAVEL IS PRESENT IN APPRECIABLE AMOUNTS THE TERM "GRAVELLY" MAY BE ADDED TO THE CLASS NAME, VIZ, "GRAVELLY SAND". THE TERMS "COARSE", "MEDIUM" AND "FINE" WHEN USED TO DESCRIBE SAND, SILT AND GRAVEL REFER TO STANDARD GRADE SIZE LIMITS.
LEGEND OF EARTH MATERIALS
GRAVEL
SAND
SILT
CLAY
SANDY CLAY OR CLAYEY SAND
SANDY SILT OR SILTY SAND
SILTY CLAY OR CLAYEY SILT
PEAT AND/OR ORGANIC MATTER
FILL MATERIAL
IGNEOUS ROCK
SEDIMENTARY ROCK
METAMORPHIC ROCK
LEGEND OF BORING OPERATIONS
PLAN OF ANY BORING
PENETROMETER
2½" CONE PENETROMETER
SAMPLER BORING (DRY)
ROTARY BORING (WET)
AUGER BORING (DRY)
JET BORING
CORE BORING
TEST PIT
1" SOIL TUBE
ROTARY BORING
PENETRATION BORING
NOTES
The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans.
Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.
CALIFA OVERHEAD
LOG OF TEST BORINGS
SCALE 1"=10'
BRIDGE 41-14L
FILE E41
DRAWING C-1940-1
PREL. DRAWING NO. P-1940
SHEET 19 OF 19

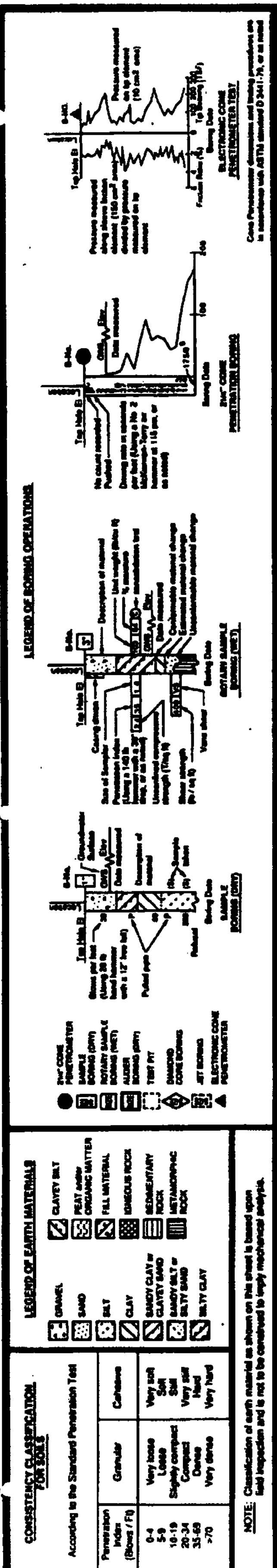
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	23.1/26.9	32	55

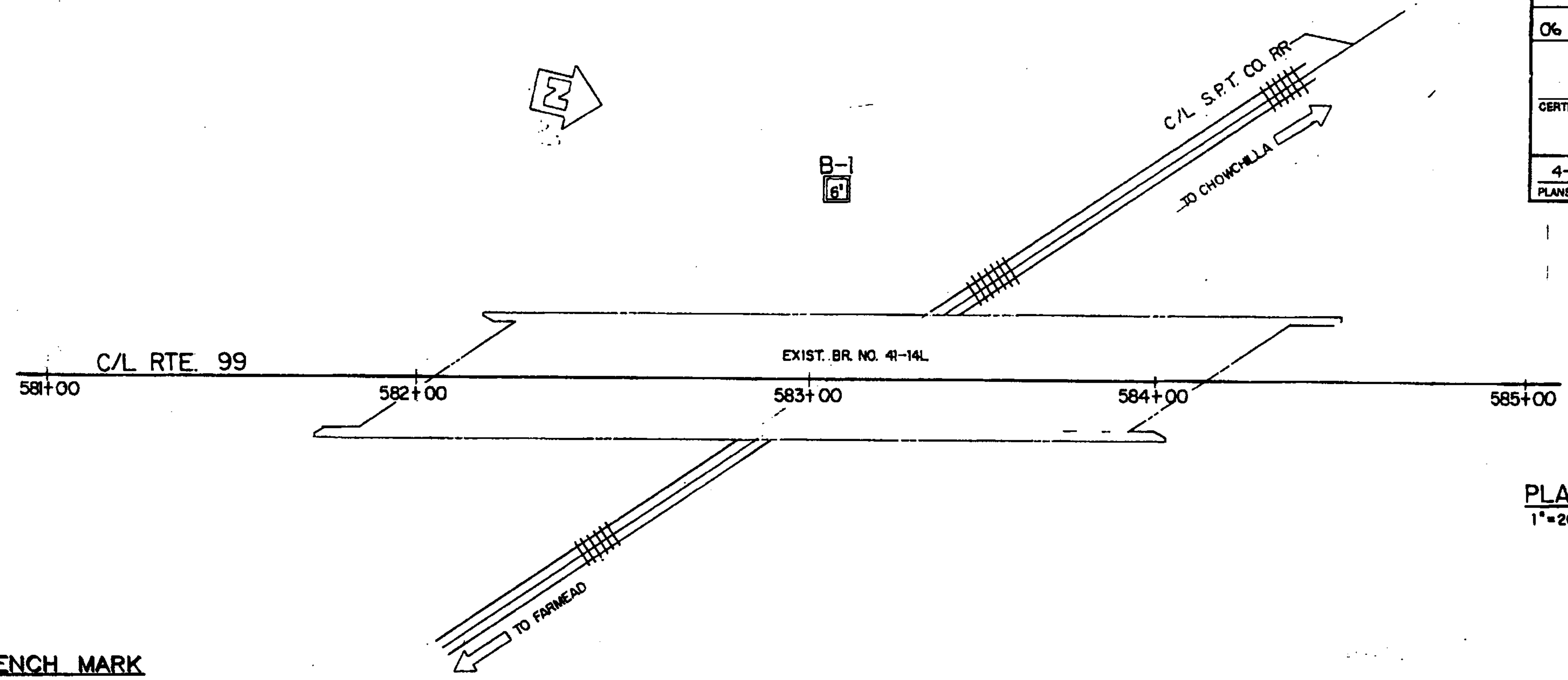
CERTIFIED ENGINEERING GEOLOGIST

4-29-91

PLANS APPROVAL DATE

REGISTERED GEOLOGIST R. W. FOX No. 78 Exp. 6-30-92 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA





PLAN
1"=20'

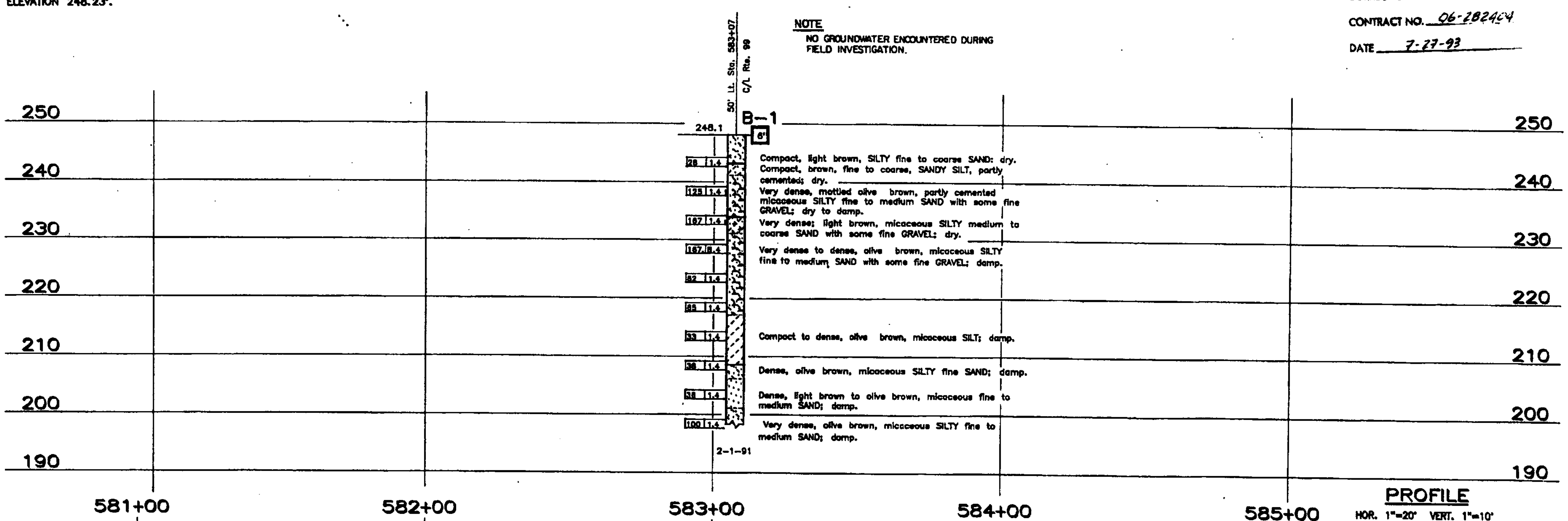
BENCH MARK

FD. P-85 USCG BM BRASS DISC STAMPED 248.677 P-85 1930 LOCATED 330' SOUTHEAST ON EAST SIDE OF SOUTH ABUT. BRIDGE NO. B-171.78 ELEVATION 248.23'.

NOTE
NO GROUNDWATER ENCOUNTERED DURING FIELD INVESTIGATION.

NO CORRECTIONS THIS SHEET

AS BUILT
EAC 9-7-93
CORRECTIONS BY J. Abercrombie
CONTRACT NO. 06-282404
DATE 7-27-93



PROFILE
HOR. 1"=20' VERT. 1"=10'

OFFICE OF TRANSPORTATION MATERIALS & RESEARCH	ENGINEERING GEOLOGY BRANCH	
DRAWN BY	LEONY L. LOPEZ	2/91
CHECKED BY		

State of CALIFORNIA DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES
STRUCTURE DESIGN

BRIDGE NO. 41-14L
POST MILE 23.1

CALIFA OVERHEAD (WIDEN)

LOG OF TEST BORINGS 1 OF 2

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

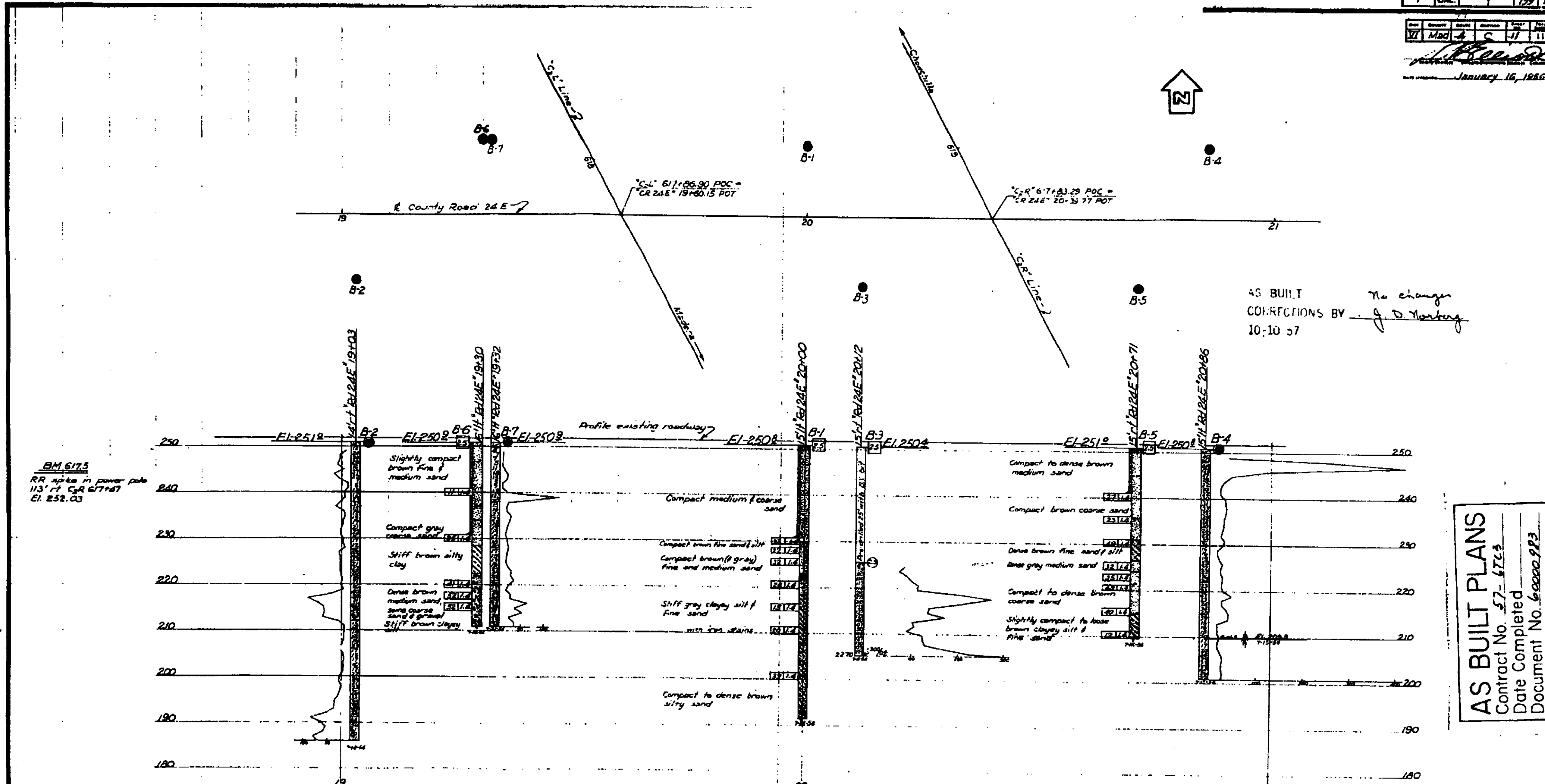
CU 06200
EA 282401

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 18 OF 19

TL 6051 REV 3/90



BRIDGE DEPARTMENT

AS BUILT CORRECTIONS BY J. D. Norberg
No changes
10-10-57

AS BUILT PLANS
Contract No. 57-4723
Date Completed
Document No. 60000983

January 16, 1956

Dist	County	Route	Section	Sheet No.	Total Sheets
VI	Mad	4	C	11	11

Fed. Road Dist. No.	State			Sheet No.	Total Sheets
7	CAL.			139	177

CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

DIAGRAM SHOWING THE BASIS FOR ESTIMATES OF GRADE SIZE DISTRIBUTION USED IN DETERMINATION OF CLASS NAMES. IF GRAVEL IS PRESENT IN APPRECIABLE AMOUNTS THE TERM "GRAVELLY" MAY BE ADDED TO THE CLASS NAME, VIZ. "GRAVELLY SAND". THE TERMS "COARSE", "MEDIUM" AND "FINE" WHEN USED TO DESCRIBE SAND, SILT AND GRAVEL REFER TO STANDARD GRADE SIZE LIMITS.

LEGEND OF EARTH MATERIALS

Gravel · Sand · Silt · Clay · Sandy Clay or Clayey Sand · Sandy Silt or Silty Sand · Silty Clay or Clayey Silt · Peat and Organic Matter · Fill Material · Igneous Rock · Sedimentary Rock · Metamorphic Rock

LEGEND OF BORING OPERATIONS

Plan of any boring · Penetrometer · 2½" Cone Penetrometer · Sampler boring (dry) · Rotary boring (wet) · Auger boring (dry) · Jet boring · Core boring · Test pit

1" SOIL TUBE · ROTARY BORING · PENETRATION BORING

NOTES

The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans.

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

ROAD 24E OVERCROSSING

LOG OF TEST BORINGS

SCALE 1"=10' · BRIDGE 41-54 · FILE E-41 · DRAWING C=3477-11

PREL. DRAWING NO. P-3477 37

PR-3477-2

139

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.
DATE June 11, 1971 SIGNATURE [signature] TITLE [illegible]

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
7	CAL.			148	177

NOTE
THIS LOG OF TEST BORINGS IS AVAILABLE ON MICROFILM AT OFFICE OF STRUCTURES DESIGN SACRAMENTO, CALIFORNIA

DIST	COUNTY	ROUTE	SECTION	SHEET NO.	TOTAL SHEETS
VI	Mad	4	C	3	5

January 16, 1956

ENGINEERING GEOLOGY BRANCH - TRANSPORTATION LABORATORY
REGISTERED ENGINEER - CIVIL

BERENDA SLOUGH
LOG OF TEST BORINGS 2 of 2

CU: 08
EA: 282401
BRIDGE No. 41-44 R/L

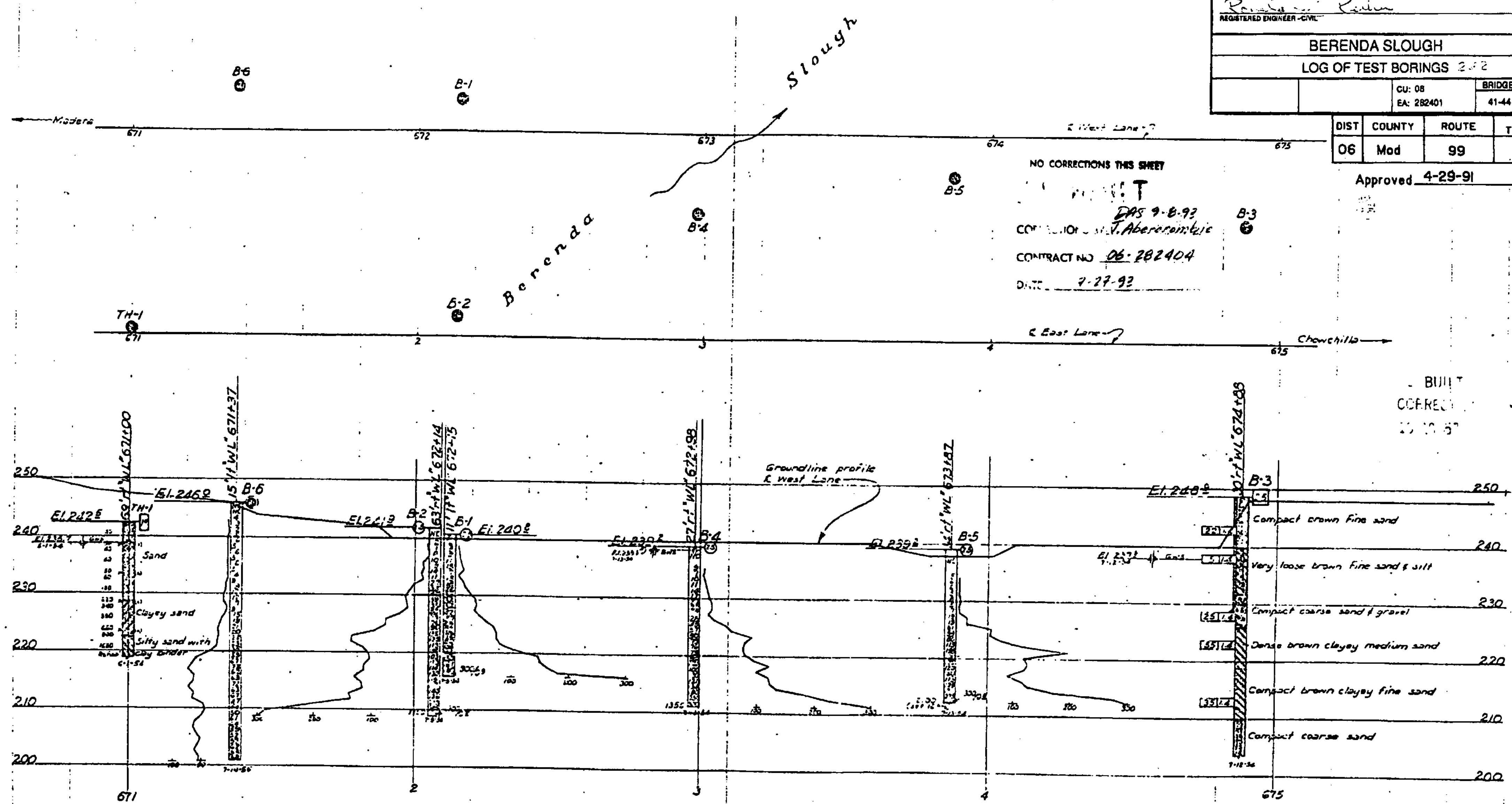
REGISTERED PROFESSIONAL ENGINEER R.L. RICHMAN No. 39669 Exp. 12-31-93 CIVIL STATE OF CALIFORNIA

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	23.1/26.9	44	55

Approved 4-29-91

NO CORRECTIONS THIS SHEET
AS BUILT
DAS 9-8-93
CONTRACTOR J. Abercrombie
CONTRACT NO 06-282404
DATE 7-27-93

AS BUILT CORRECTIONS 10-10-57
No changes
J. D. Norburg



AS BUILT PLANS
Contract No. 57-47C3
Date Completed
Document No. 60000893

Sheet No. 11 of 11

CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

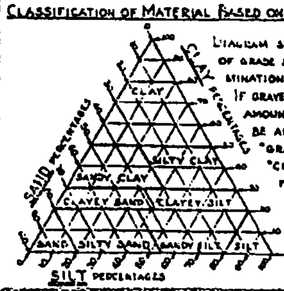


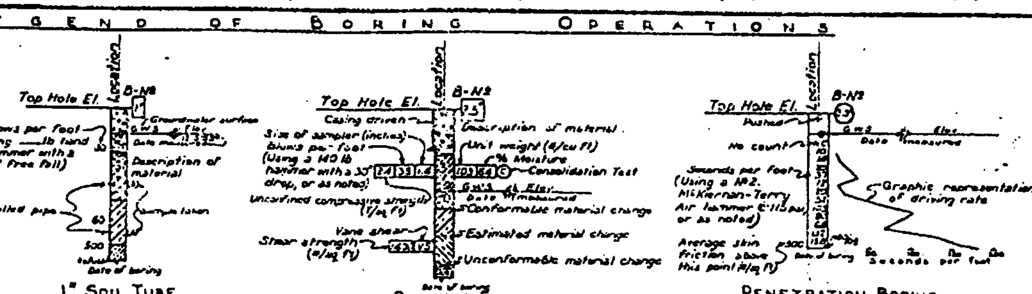
DIAGRAM SHOWING THE BASIS FOR ESTIMATES OF GRADE SIZE DISTRIBUTION USED IN DETERMINATION OF CLASS NAMES. IF GRAVEL IS PRESENT IN APPRECIABLE AMOUNTS THE TERM "GRAVELLY" MAY BE ADDED TO THE CLASS NAME, VIZ. "GRAVELLY SAND". THE TERMS "COARSE", "MEDIUM" AND "FINE" WHEN USED TO DESCRIBE SAND, SILT AND GRAVEL REFER TO STANDARD GRADE SIZE LIMITS.

LEGEND OF EARTH MATERIALS

- GRAVEL
- SAND
- SILT
- CLAY
- SANDY CLAY OR CLAYEY SAND
- SANDY SILT OR SILTY SAND
- SILTY CLAY OR CLAYEY SILT
- PEAT AND/OR ORGANIC MATTER
- FILL MATERIAL
- IGNEOUS ROCK
- SEDIMENTARY ROCK
- METAMORPHIC ROCK

LEGEND OF BORING OPERATIONS

- PLAN OF ANY BORING
- PENETROMETER
- 2½" CONE PENETROMETER
- SAMPLER BORING (DRY)
- ROTARY BORING (WET)
- AUGER BORING (DRY)
- JET BORING
- CORE BORING
- TEST PIT



NOTES

The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans.

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

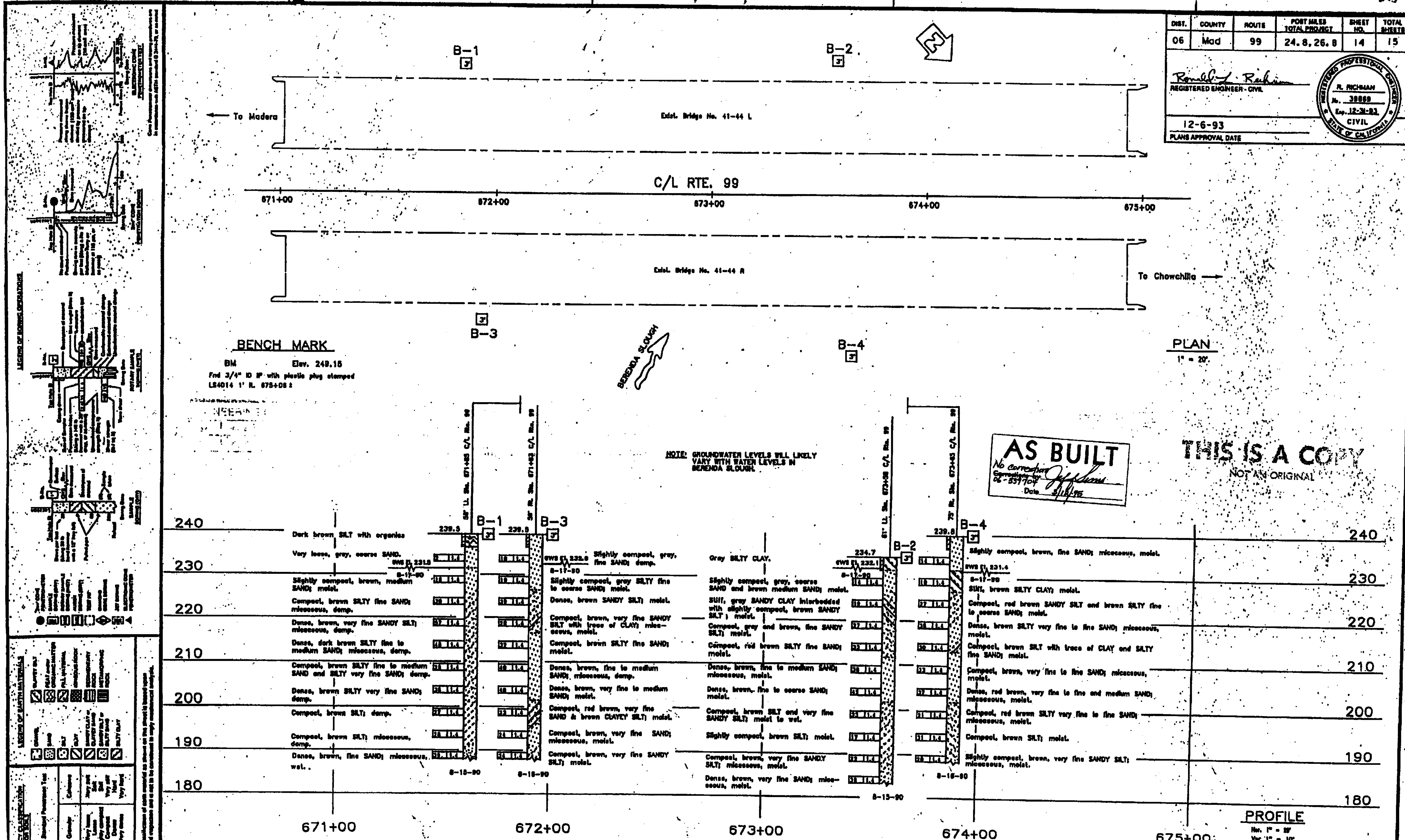
BERENDA SLOUGH BRIDGE (WIDEN)
LOG OF TEST BORINGS 2 of 2

SCALE Horiz. 1"=20' Vert. 1"=10' | BRIDGE 41-44 R&L | FILE E-41 | DRAWING C-3316-5

BRIDGE DEPARTMENT

PC-3316-2

ClibPDF - www.fastio.com



ENGINEERING GEOLOGY BRANCH - TRANSPORTATION LABORATORY			State of CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES STRUCTURE DESIGN 9	BRIDGE NO. 41-044R/L	BERENDA SLOUGH BRIDGE (STRENGTHEN)
DRAWN BY	IRMA GAMARRA	8/90	PROJECT ENGINEER		POST MILE 24.8	LOG OF TEST BORINGS 1 OF 2
CHECKED BY	RLR	9/90		CU 06200 EA 559701		SHEET 4 OF 5

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

NOTE
THIS LOG OF TEST BORINGS IS AVAILABLE ON MICROFILM AT OFFICE OF STRUCTURES DESIGN SACRAMENTO, CALIFORNIA

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	24.8, 26.8	15	15

ENGINEERING GEOLOGY BRANCH, TRANSPORTATION LABORATORY

REGISTERED ENGINEER - CIVIL

BERENDA SLOUGH

12-6-93 LOG OF TEST BORINGS 2 of 2

PLANS APPROVAL DATE

CU: 06
EA: 282401

BRIDGE No. 41-44 R/L

REGISTERED PROFESSIONAL ENGINEER R.L. RICHMAN No. 28988 Exp. 12-31-93 CIVIL STATE OF CALIFORNIA

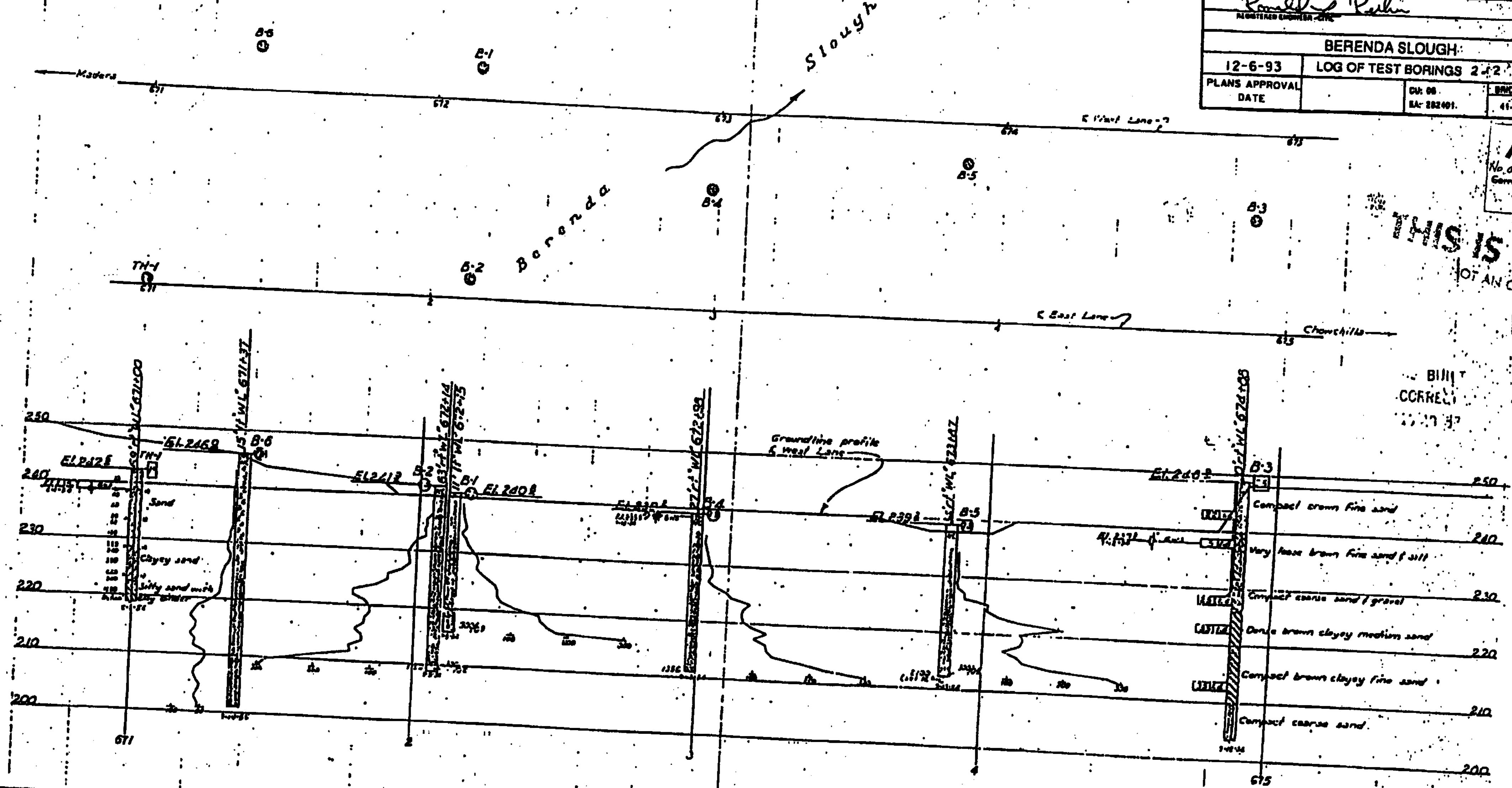
AS BUILT
No corrections
Corrections by
Date 8/10/95

THIS IS A COPY OF AN ORIGINAL

AS BUILT CORRECTIONS

No changes
J. D. Norbury

AS BUILT PLANS
Contract No. 57-474-3
Date Completed
Document No. 60000983



CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

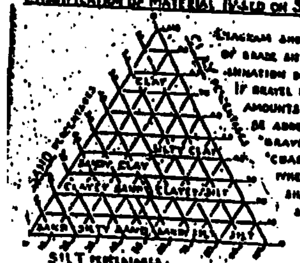


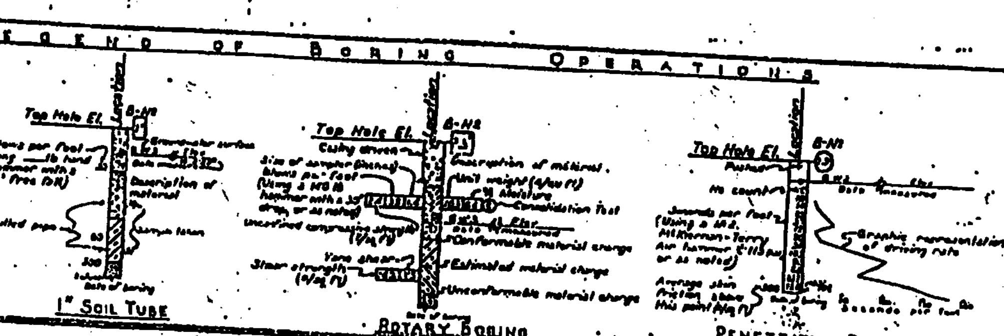
DIAGRAM SHOWING THE BASIS FOR ESTIMATES OF GRADE SIZE DISTRIBUTION USED IN DETERMINATION OF CLASS NAMES. IF GRAVEL IS PRESENT IN APPRECIABLE AMOUNTS THE TERM "GRAVELLY" MAY BE ADDED TO THE CLASS NAME, VIZ. "GRAVELLY SAND". THE TERMS "COARSE", "MEDIUM" AND "FINE" WHEN USED TO DESCRIBE SAND, SILT AND GRAVEL REFER TO STANDARD GRADE SIZE LIMITS.

LEGEND OF EARTH MATERIALS

- GRAVEL
- SAND
- SILT
- CLAY
- SANDY CLAY OR CLAYEY SAND
- SANDY SILT OR SILTY SAND
- SILTY CLAY OR CLAYEY SILT
- PEAT AND/OR ORGANIC MATTER
- FILL MATERIAL
- IGNEOUS ROCK
- SEDIMENTARY ROCK
- METAMORPHIC ROCK

- PLAN OF ANY BORING
- PENETROMETER
- 2½" CONE PENETROMETER
- SAMPLER BORING (DRY)
- ROTARY BORING (WET)
- AUGER BORING (DRY)
- JET BORING
- CORE BORING
- TEST PIT

LEGEND OF BORING OPERATIONS



Sheet No. 5 of 5

NOTES

The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans.

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

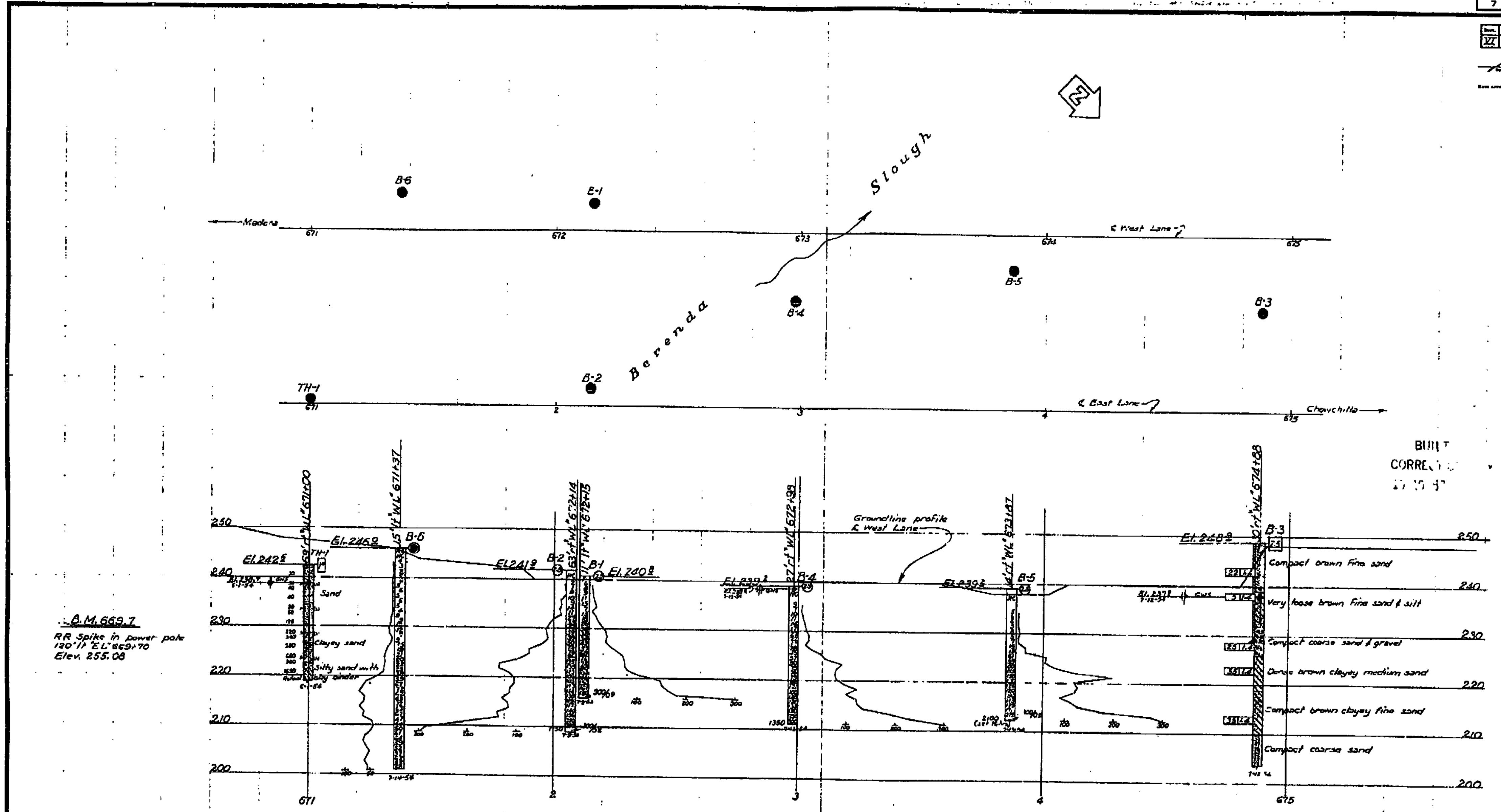
BERENDA SLOUGH BRIDGE (STRENGTHEN)

LOG OF TEST BORINGS 2 of 2

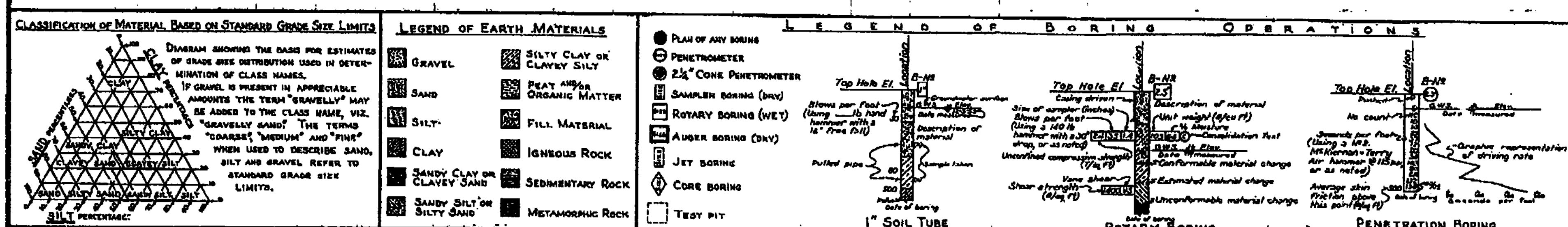
SCALE Horiz. 1" = 20' Vert. 1" = 10' | BRIDGE 41-44 R/L | E-41 | DRAWING C = 3316 - 5

3316 10

PR-3316-2



AS BUILT PLANS
Contract No. 52-47C3
Date Completed
Document No. 60000223



NOTES

The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans.

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STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

BRIDGE ACROSS BERENDA SLOUGH

LOG OF TEST BORINGS

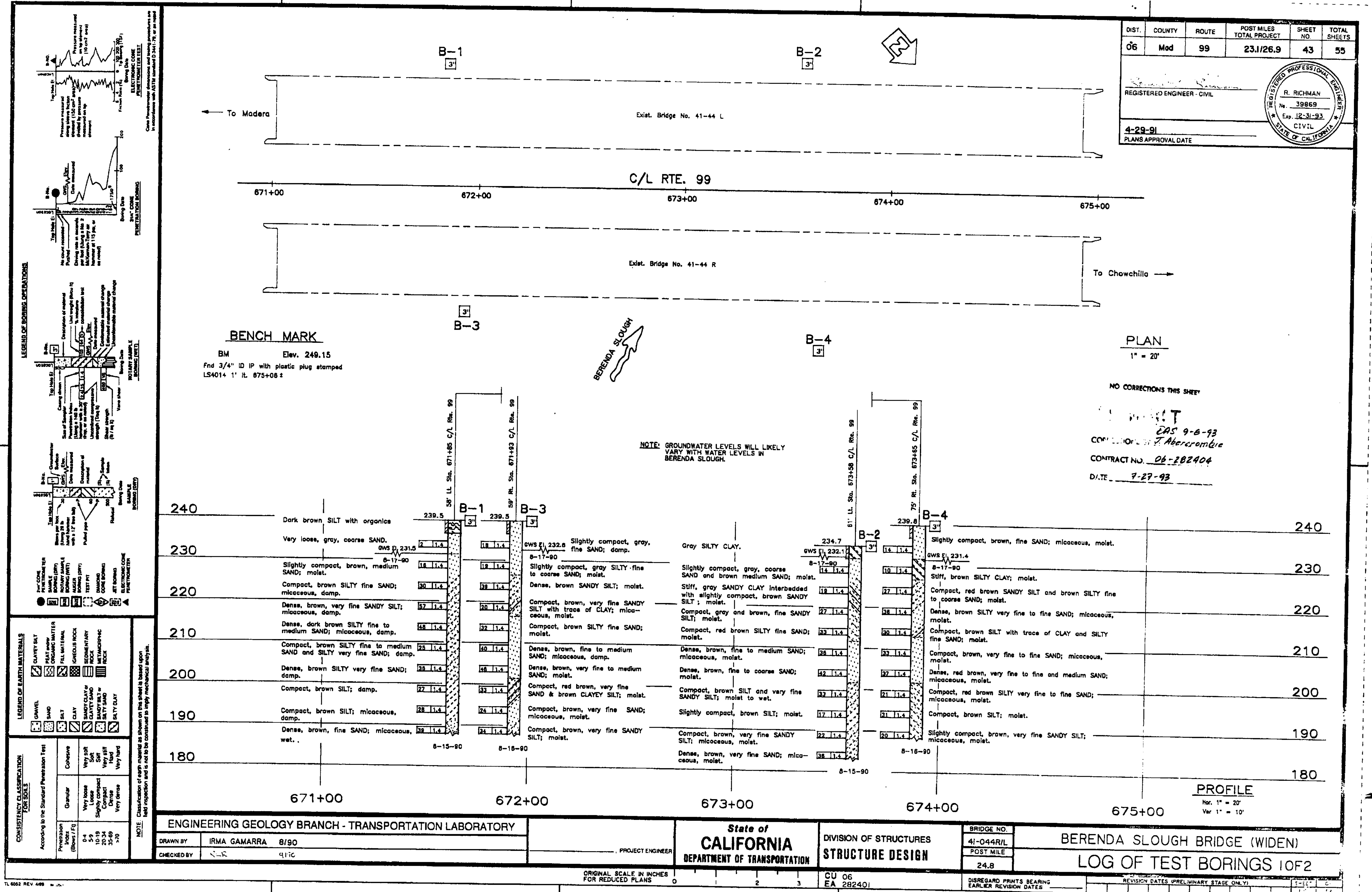
SCALE Horiz. 1"=20' Vert. 1"=10'	BRIDGE 41-44 R&L	FILE E-41	DRAWING C=3316-5

3316 10

PE 3316-2

BRIDGE DEPARTMENT

148



DIST. 06 | COUNTY Mad | ROUTE 99 | POST MILES TOTAL PROJECT 23.1/26.9 | SHEET NO. 43 | TOTAL SHEETS 55
REGISTERED ENGINEER - CIVIL
R. RICHMAN No. 39869 Exp. 12-31-93 CIVIL STATE OF CALIFORNIA REGISTERED PROFESSIONAL ENGINEER
4-29-91
PLANS APPROVAL DATE
B-1
B-2
B-3
B-4
To Madera
Exist. Bridge No. 41-44 L
C/L RTE. 99
671+00
672+00
673+00
674+00
675+00
Exist. Bridge No. 41-44 R
To Chowchilla
BENCH MARK
BM Elev. 249.15
Fnd 3/4" ID IP with plastic plug stamped LS4014 1' lt. 675+06 ±
BERENDA SLOUGH
PLAN
1" = 20'
NO CORRECTIONS THIS SHEET
EAS 9-6-93
T. Abercrombie
CONTRACT NO. 06-282404
DATE 7-27-93
NOTE: GROUNDWATER LEVELS WILL LIKELY VARY WITH WATER LEVELS IN BERENDA SLOUGH.
58' Lt. Sta. 671+85 C/L Rte. 99
59' Rt. Sta. 671+93 C/L Rte. 99
61' Lt. Sta. 673+58 C/L Rte. 99
75' Rt. Sta. 673+65 C/L Rte. 99
Dark brown SILT with organics
Very loose, gray, coarse SAND.
GWS El. 231.5 8-17-90
Slightly compact, brown, medium SAND; moist.
Compact, brown SILTY fine SAND; micaceous, damp.
Dense, brown, very fine SANDY SILT; micaceous, damp.
Dense, dark brown SILTY fine to medium SAND; micaceous, damp.
Compact, brown SILTY fine to medium SAND and SILTY very fine SAND; damp.
Dense, brown SILTY very fine SAND; damp.
Compact, brown SILT; damp.
Compact, brown SILT; micaceous, damp.
Dense, brown, fine SAND; micaceous, wet.
8-15-90
GWS El. 232.6 8-17-90
Slightly compact, gray, fine SAND; damp.
Slightly compact, gray SILTY fine to coarse SAND; moist.
Dense, brown SANDY SILT; moist.
Compact, brown, very fine SANDY SILT with trace of CLAY; micaceous, moist.
Compact, brown SILTY fine SAND; moist.
Dense, brown, fine to medium SAND; micaceous, damp.
Dense, brown, very fine to medium SAND; moist.
Compact, red brown, very fine SAND & brown CLAYEY SILT; moist.
Compact, brown, very fine SAND; micaceous, moist.
Compact, brown, very fine SANDY SILT; moist.
8-16-90
Gray SILTY CLAY.
GWS El. 232.1 8-17-90
Slightly compact, gray, coarse SAND and brown medium SAND; moist.
Stiff, gray SANDY CLAY interbedded with slightly compact, brown SANDY SILT; moist.
Compact, gray and brown, fine SANDY SILT; moist.
Compact, red brown SILTY fine SAND; moist.
Dense, brown, fine to medium SAND; micaceous, moist.
Dense, brown, fine to coarse SAND; moist.
Compact, brown SILT and very fine SANDY SILT; moist to wet.
Slightly compact, brown SILT; moist.
Compact, brown, very fine SANDY SILT; micaceous, moist.
Dense, brown, very fine SAND; micaceous, moist.
8-15-90
Slightly compact, brown, fine SAND; micaceous, moist.
GWS El. 231.4 8-17-90
Stiff, brown SILTY CLAY; moist.
Compact, red brown SANDY SILT and brown SILTY fine to coarse SAND; moist.
Dense, brown SILTY very fine to fine SAND; micaceous, moist.
Compact, brown SILT with trace of CLAY and SILTY fine SAND; moist.
Compact, brown, very fine to fine SAND; micaceous, moist.
Dense, red brown, very fine to fine and medium SAND; micaceous, moist.
Compact, red brown SILTY very fine to fine SAND; micaceous, moist.
Compact, brown SILT; moist.
Slightly compact, brown, very fine SANDY SILT; micaceous, moist.
8-16-90
240
230
220
210
200
190
180
PROFILE
Hor. 1" = 20'
Ver 1" = 10'
LEGEND OF BORING OPERATIONS
LEGEND OF EARTH MATERIALS
CONSISTENCY CLASSIFICATION FOR SOILS
According to the Standard Penetration Test
NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.
ENGINEERING GEOLOGY BRANCH - TRANSPORTATION LABORATORY
DRAWN BY IRMA GAMARRA 8/90
CHECKED BY
PROJECT ENGINEER
State of CALIFORNIA DEPARTMENT OF TRANSPORTATION
DIVISION OF STRUCTURES
STRUCTURE DESIGN
BRIDGE NO. 41-044R/L
POST MILE 24.8
BERENDA SLOUGH BRIDGE (WIDEN)
LOG OF TEST BORINGS 1 OF 2
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
CU 06
EA 282401
DISREGARD PRINTS BEARING EARLIER REVISION DATES
REVISION DATES (PRELIMINARY STAGE ONLY)

HORIZON ENVIRONMENTAL INC.
4970 Windplay Drive, Suite #5
El Dorado Hills, California 95762
(916) 939-2170 -- Fax: (916) 939-2172

Monitoring Well No. MW-24

Drilling Company: AWA Drilling
Date Drilled: 12/23/08
Drilling Method: 10" hollow stem auger
Sampling Method: 2" split spoon

Project No.: 1121.116
Site: Former Beacon Bulk Plant No. 13464
Location: Chowchilla, CA
Geologist: Craig Roth

Depth In Feet	Sample Number	Blow Count	Inches Driven	Inches Recovered	PID Reading (ppm)	Sampling Interval	Soil Description/ Comments	Well Construction
0						0	Silty Sand and Gravel (SM/GM): FILL	
						2	10 inch diameter bore hole	
5	6	4 4 5	18	18	0	6	SANDY SILT (ML): brown, very fine-grained sand, stiff, moist	
						7	neat cement	
10	10	20 27 50/5"	17	15	0	10	SANDY SILT (ML): light brown, very fine-grained sand, hard, moist,	
						12	4" diameter PVC casing	
15	15	50/6"	6	6	5	15	SILTY SAND (SM): fine to medium-grained sand, very dense, moist	
20	20	50/6"	6	6	6	20	SILTY SAND (SM): fine to medium-grained sand, moist, very dense	
25	25	58/6"	6	6	2	25	SILTY SAND (SM): reddish brown, medium-grained sand, trace rounded pebble gravel, very dense, moist	
30	30	40 30 40	18	17	5	30	SAND (SW): tan, medium to coarse-grained sand, very dense, moist	

HORIZON ENVIRONMENTAL INC.
4970 Windplay Drive, Suite 5
El Dorado Hills, California 95762
(916) 939-2170 -- Fax: (916) 939-2172

Monitoring Well No. MW-24

Drilling Company: AWA Drilling
Date Drilled: 12/23/08
Drilling Method: 10" hollow stem auger
Sampling Method: 2" split spoon

Project No.: 1121.116
Site: Former Beacon Bulk Plant No. 13646
Location: Chowchilla, CA
Geologist: Craig Roth

Depth In Feet	Sample Number	Blow Count	Inches Driven	Inches Recovered	PID Reading (ppm)	Sampling Interval	Soil Description/ Comments	Well Construction
30						30	4" diameter PVC casing; neat cement	
35	35	30 35 42	18	17	5	34–35	SAND (SW): tan, medium to coarse-grained sand, very dense, moist	Bentonite
40	40	21 32 44	18	14	6	39–40	SAND, gravelly (SW): tan to light brown, medium to coarse-grained sand, very dense, moist	
45	45	32 44 49	18	15	8	44–45	SAND (SW): tan to light brown, medium to very coarse-grained sand, trace gravel, very dense, very moist	
50	50	20 50/6"	12	10	68	49–50	SILTY SAND (SM): olive green, fine to medium-grained sand, very dense, very moist to wet; Water	#3 sand
55	55	53/6"	6	6	1865	54–55	SAND (SW): olive green, medium to coarse-grained sand, very dense, wet	4" diameter PVC 0.020"-continuous slot screen
60	60	9 13 17	18	14	350	59–60	SAND and GRAVEL (SW): olive green, medium to coarse-grained sand, very dense, wet	

HORIZON ENVIRONMENTAL INC.
4970 Windplay Drive Suite 5
El Dorado Hills, California 95762
(916) 939-2170 -- Fax: (916) 939-2172

Well No. MW-24

Drilling Company: AWA Drilling
Date Drilled: 12/23/08
Drilling Method: 10" hollow-stem auger
Sampling Method: 2" split-spoon

Project No.: 1121.116
Site: Former Beacon Bulk Plant No. 13646
Location: Chowchilla, CA
Geologist: Craig Roth

Depth In Feet	Sample Number	Blow Count	Inches Driven	Inches Recovered	PID Reading (ppm)	Sampling Interval	Soil Description/ Comments	Well Construction
60						60	SAND (SW): continues	#3 sand
						64	SILTY SAND (SM): olive brown, medium to fine-grained sand, very dense, very moist	4" diameter PVC 0.020" continuous slot screen
65	65	54/6"	6	6	42	65		
						69	CLAY (CL): olive green-brown, medium plasticity, hard, moist	
70	70	30 50/3"	9	7	11	70	Total Depth = 70 feet Well Casing to 68 feet	
75						75		
80						80		
85						85		
90						90		

JOB 10101
LOG DESIGNATION
WELL # 1

Date: March 29 & 30, 1994
Logged by: Norman Hanson
Elevation: Bench Mark assumed Elev. 100.00
Equipment: 8 inch auger with 4 inch hollow stem

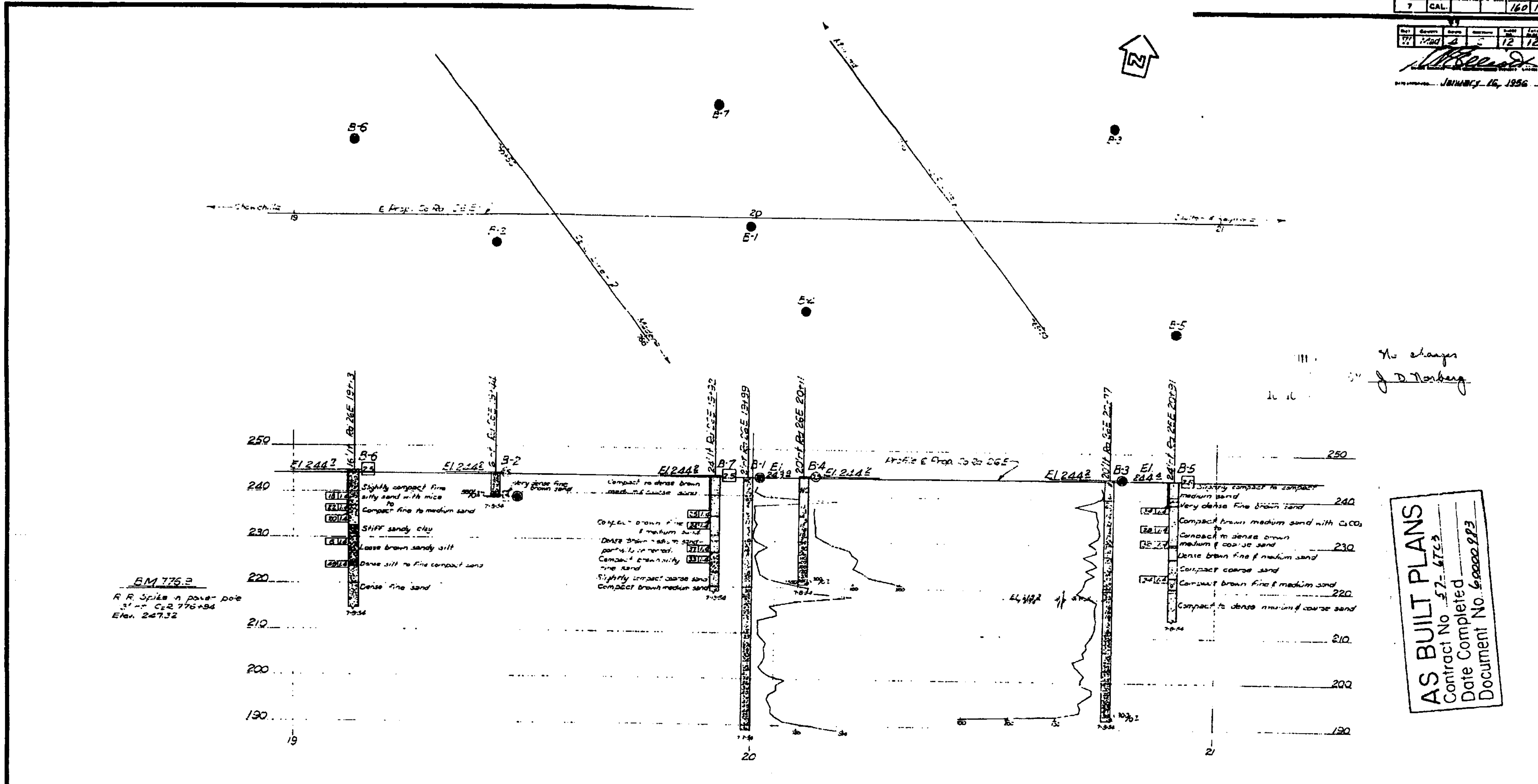
Depth Feet	Blows per 6 inches	USC	Soil Description	Notes	
0					
5					
10	33		brown sandy clay	PID meter 160 mg/kg	*
15	21		brown sand	PID meter 9700 mg/kg	*
20	20		brown sand coarse	PID meter 825 mg/kg	*
25	15		brown sand	PID meter 60 mg/kg	*
30	29		brown sandy clay	PID meter 80 mg/kg	*
35	22		brown sandy clay	PID meter 1500 mg/kg	*
40	23		brown sand	PID meter 220 mg/kg	*
45	22		brown sand	PID meter 320 mg/kg	*
50	23		brown sandy clay	PID meter 2330 mg/kg	*
55	14		brown sandy clay	PID meter 960 mg/kg	*
60	11		silty sandy clay very wet	PID meter 60 mg/kg	*
65	15		brown sandy clay water	PID meter 275 mg/kg	*
70	25		silty sandy clay water	PID meter 1400 mg/kg	*
75	32		silty sandy clay water	PID meter 2100 mg/kg	*

filled hole with clean sand up to 68 ft. below the surface placed in the hole 20 ft. of perforated 2 inch PVC pipe starting at the bottom and then at the top of the perforated pipe added 48 ft. of blank 2 inch PVC pipe. Filled the hole with clean sa round the perforated pipe up 21 ft. from the bottom at 47 ft below the surface then placed in the hole 3 ft. of bentonite the remainder of the hole was filled with cement sand slurry. A metal watertight cover was set into the slurry with the top approximately 6 inches above the souroundin ground surface A water tight locking stopper was placed in the PVC 2 inch pipe.

* No odor was detected on any of the samples.

EXHIBIT D

SL0603935695
P M 26 40



AS BUILT PLANS
Contract No. 57-4TC3
Date Completed
Document No. 69000983

Classification of Material Based on Standard Grade Size Limits

Diagram showing the basis for estimates of grade size distribution used in determination of class names. If gravel is present in appreciable amounts the term "gravelly" may be added to the class name, viz. "gravelly sand". The terms "coarse", "medium" and "fine" when used to describe sand, silt and gravel refer to standard grade size limits.

Legend of Earth Materials

Gravel · Sand · Silt · Clay · Sandy Clay or Clayey Sand · Sandy Silt or Silty Sand · Silty Clay or Clayey Silt · Peat and/or Organic Matter · Fill Material · Igneous Rock · Sedimentary Rock · Metamorphic Rock

Legend of Boring Operations

Plan of any boring · Penetrometer · 2½" Cone Penetrometer · Sampler boring (dry) · Rotary boring (wet) · Auger boring (dry) · Jet boring · Core boring · Test pit

1" Soil Tube · Rotary Boring · Penetration Boring

NOTES

The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans.

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STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

ROAD 26E OVERCROSSING

LOG OF TEST BORINGS

Scale	Bridge	File	Drawing
1" = 10'	41-55	E-41	C-3478-12

Dist	State	Sheet No.	Total Sheets
7	CAL.	160	177

Dist	County	Route	Section	Sheet No.	Total Sheets
VI	Mad	4	C	12	12

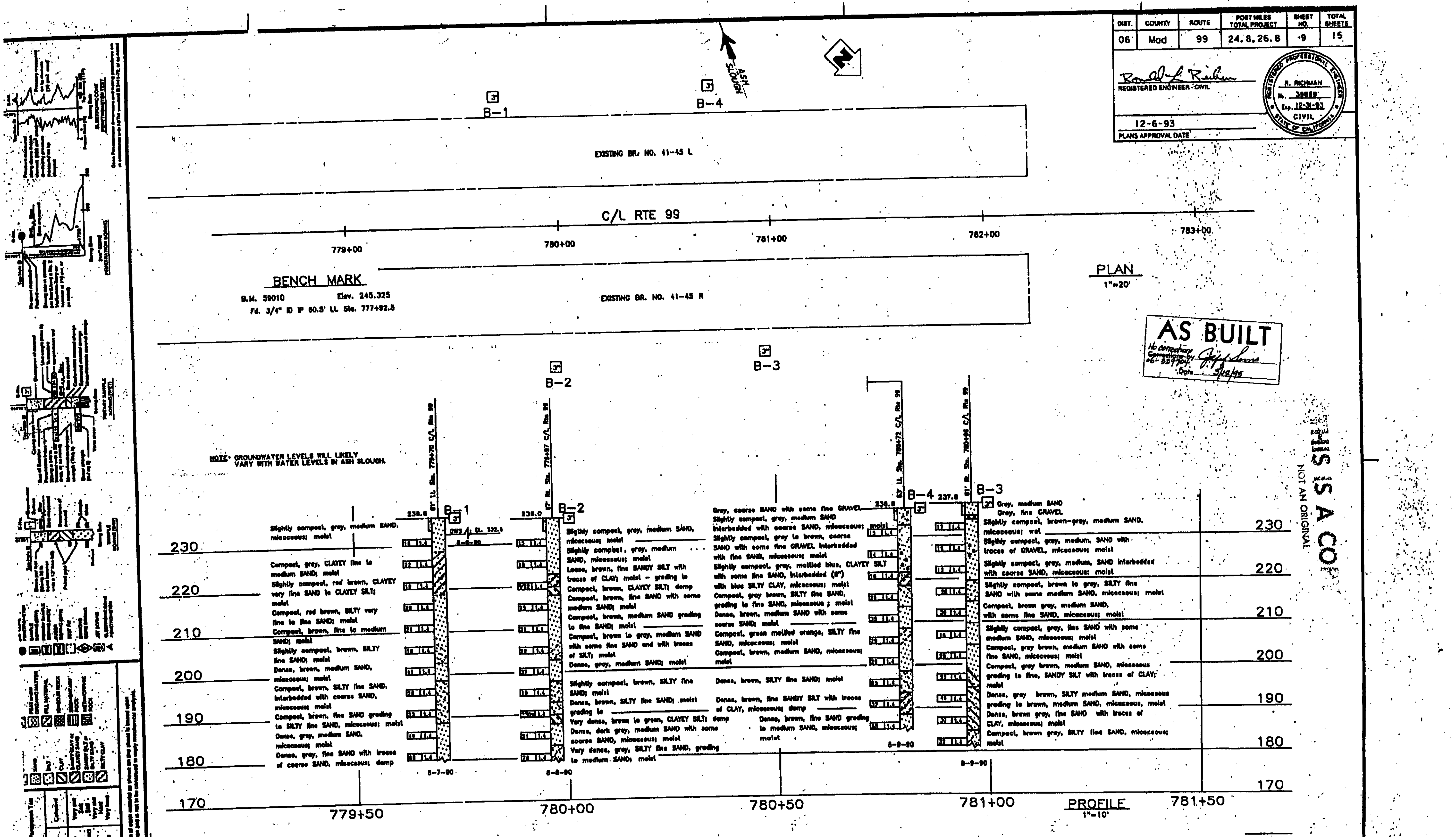
Drawing No. 3478 30

160

PB-3478-12

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE ______ SIGNATURE ______ TITLE ______



DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	24.8, 26.8	9	15

REGISTERED ENGINEER - CIVIL

R. RICHMAN No. 38889 Exp. 12-31-93 CIVIL STATE OF CALIFORNIA

12-6-93
PLANS APPROVAL DATE

ENGINEERING GEOLOGY BRANCH - TRANSPORTATION LABORATORY

DRAWN BY ED FONG 8/90
CHECKED BY RLR 9/90

PROJECT ENGINEER

State of CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES
STRUCTURE DESIGN 9

BRIDGE NO. 41-45R/L
POST MILE 26.8

ASH SLOUGH BRIDGE (STRENGTHEN)
LOG OF TEST BORINGS 1 OF 2

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU 06200
EA 929701

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	24.8, 26.8	10	15

ENGINEERING GEOLOGY BRANCH - TRANSPORTATION LABORATORY

REGISTERED ENGINEER - CIVIL

ASH SLOUGH

12-6-93 LOG OF TEST BORINGS 2 of 2

PLANS APPROVAL DATE

CU: 06
EA: 282401

BRIDGE No. 41-45 R/L

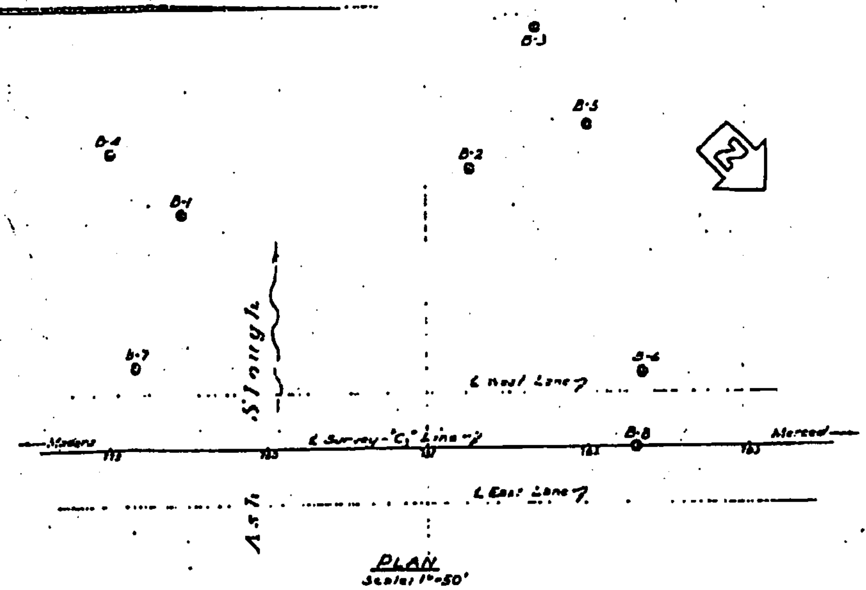
R.L. RICHMAN
CIVIL
STATE OF CALIFORNIA

NOTE
THIS LOG OF TEST BORINGS IS AVAILABLE ON MICROFILM AT OFFICE OF STRUCTURES DESIGN SACRAMENTO, CALIFORNIA

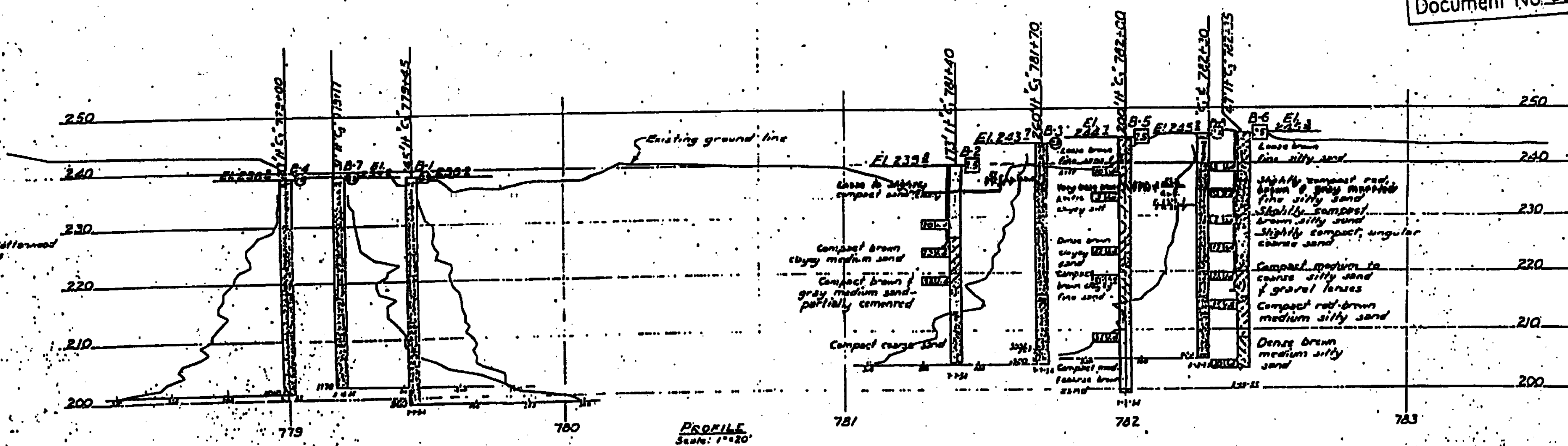
BUILT No changes
RECORD BY J. D. Norberg
5-10-57

AS BUILT
No corrections
Corrections by Jeff Sims
06-859704
Date 3/18/95

AS BUILT PLANS
Contract No. 57-6TC3
Date Completed
Document No. 60000983



PLAN
Scale: 1"=50'



PROFILE
Scale: 1"=20'

THIS IS A COPY
NOT AN ORIGINAL

CLASSIFICATION OF MATERIALS BASED ON STANDARD GRADE SIZE LIMITS

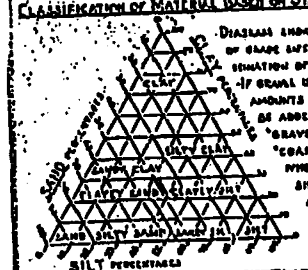


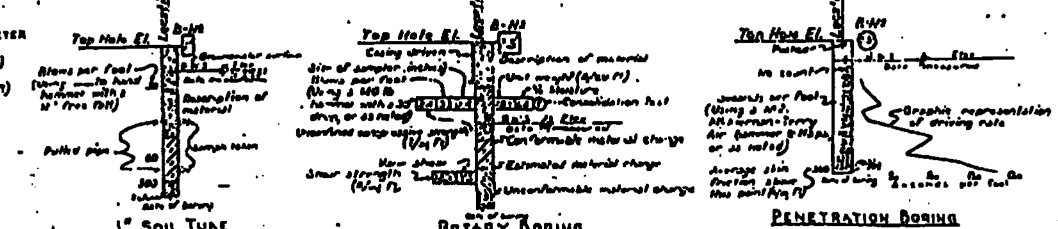
DIAGRAM SHOWING THE BASIS FOR ESTIMATES OF GRADE SIZE DISTRIBUTION USED IN DETERMINATION OF CLASS NAMES.
IF GRAVEL IS PRESENT IN APPRECIABLE AMOUNTS THE TERM "GRAVELLY" MAY BE ADDED TO THE CLASS NAME, VIZ, "GRAVELLY SAND". THE TERMS "COARSE", "MEDIUM" AND "FINE" WHEN USED TO DESCRIBE SAND, SILT AND GRAVEL REFER TO STANDARD GRADE SIZE LIMITS.

LEGEND OF EARTH MATERIALS

- Gravel
- Sand
- Silt
- Clay
- Sandy Clay or Clayey Sand
- Sandy Silt or Silty Sand
- Silty Clay or Clayey Silt
- Peat and/or Organic Matter
- Fill Material
- Igneous Rock
- Sedimentary Rock
- Metamorphic Rock

LEGEND OF BORING OPERATIONS

- Plan of any boring
- Penetrometer
- 2½" Cone Penetrometer
- Sampler boring (dry)
- Rotary boring (wet)
- Auger boring (dry)
- Jet boring
- Core boring
- Test pit



NOTES

The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans.
Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

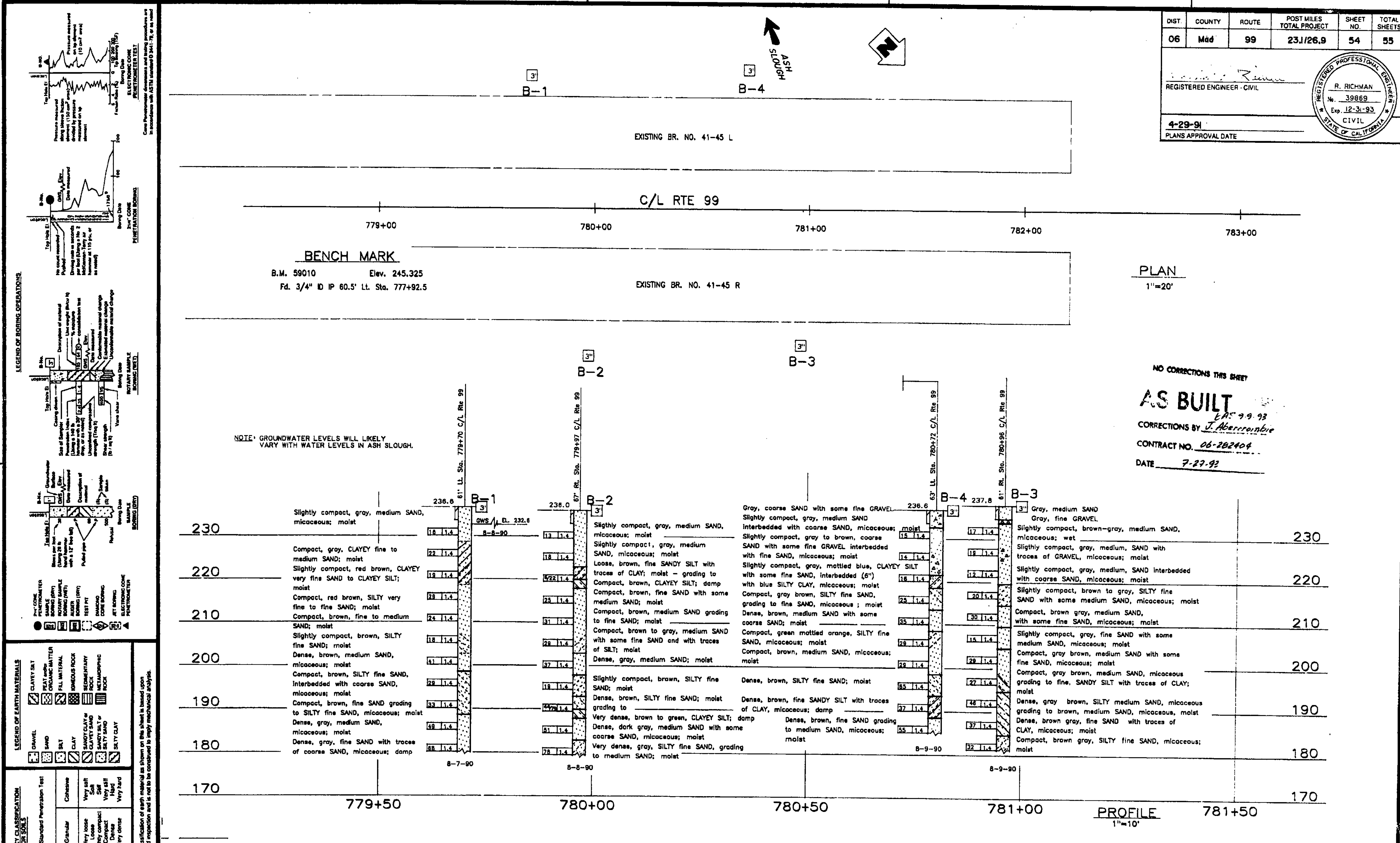
ASH SLOUGH BRIDGE (STRENGTHEN)

LOG OF TEST BORINGS 2 of 2

SCALE As shown	BRIDGE 41-45 R/L	FILE E-11.	DRAWING C-3396-5

Sheet No. 5 of 5

PR-3395-5



DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	23.1/26.9	54	55

REGISTERED ENGINEER - CIVIL

4-29-91
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER R. RICHMAN No. 39869 Exp. 12-31-93 CIVIL STATE OF CALIFORNIA

ENGINEERING GEOLOGY BRANCH - TRANSPORTATION LABORATORY

DRAWN BY ED FONG 8/90
CHECKED BY

PROJECT ENGINEER

State of CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES
STRUCTURE DESIGN

BRIDGE NO. 41-45R/L
POST MILE

ASH SLOUGH BRIDGE (WIDEN)
LOG OF TEST BORINGS 1 OF 2

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 06
EA 282401

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

TL 6052 REV. 4/89

FED. ROAD DIST. NO.	STATE			SHEET NO.	TOTAL SHEETS
7	CAL.			165	177

DIST.	COUNTY	ROUTE	POST MILE-TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	23.1/26.9	55	55

Date Approved 4-29-91

January 16, 1956

ENGINEERING GEOLOGY BRANCH - TRANSPORTATION LABORATORY

REGISTERED ENGINEER - CIVIL

ASH SLOUGH

LOG OF TEST BORINGS 2 of 2

CU: 06 EA: 282401 — BRIDGE No. 41-45 R/L

REGISTERED PROFESSIONAL ENGINEER — R.L. RICHMAN — No. 39869 — Exp. 12-31-93 — CIVIL — STATE OF CALIFORNIA

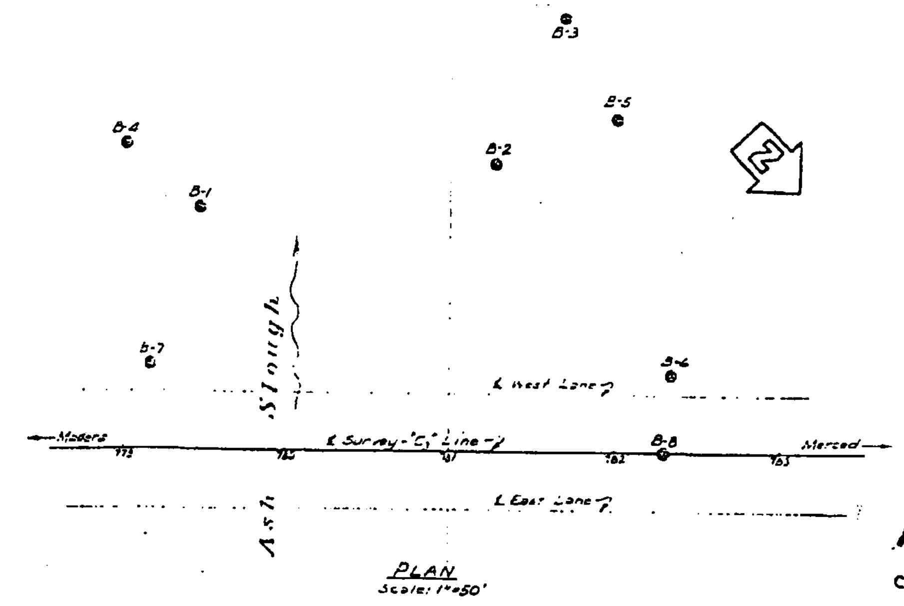
NOTE
THIS LOG OF TEST BORINGS IS AVAILABLE ON MICROFILM AT OFFICE OF STRUCTURES DESIGN SACRAMENTO, CALIFORNIA

BUILT — No changes
RECORD BY J. D. Norberg
5-10-57

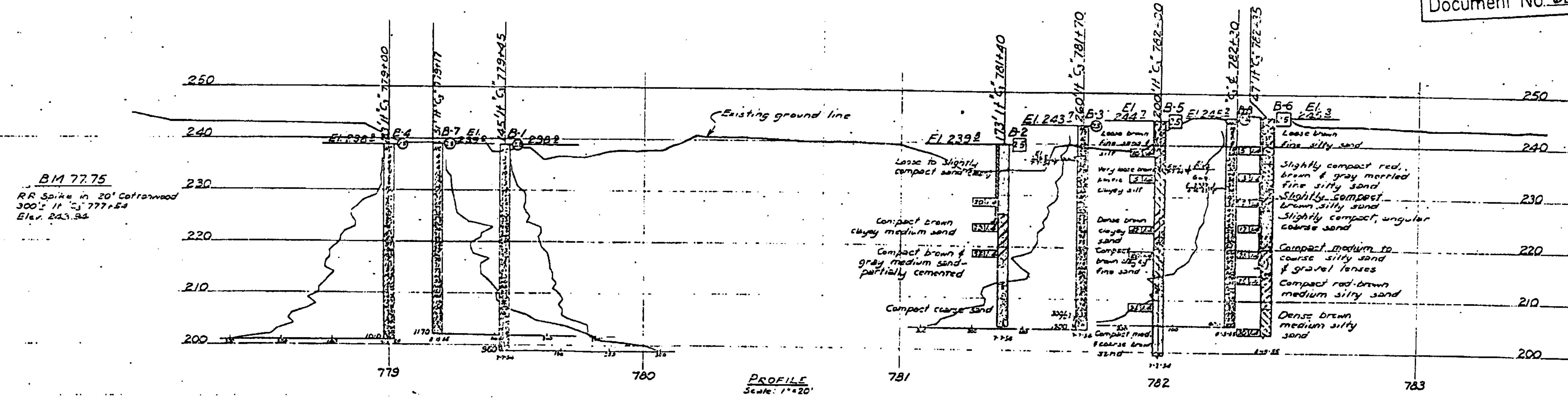
NO CORRECTIONS THIS SHEET

AS BUILT
DAS 9-9-93
CORRECTIONS BY J. Abercrombie
CONTRACT NO. 06-282404
DATE 7-27-93

AS BUILT PLANS
Contract No. 57-6TC3
Date Completed
Document No. 60000983



BRIDGE DEPARTMENT



CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

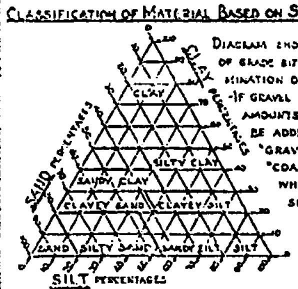


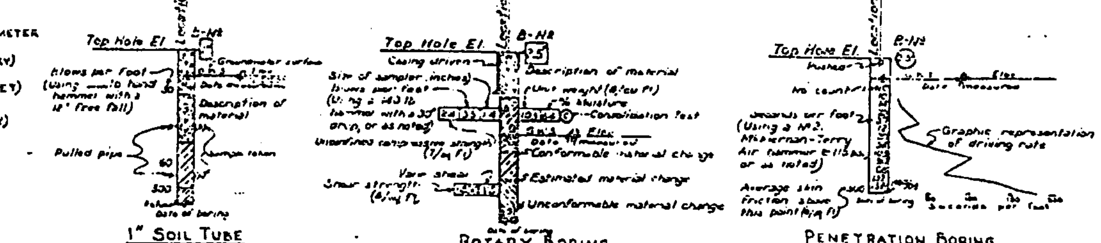
DIAGRAM SHOWING THE BASIS FOR ESTIMATES OF GRADE SIZE DISTRIBUTION USED IN DETERMINATION OF CLASS NAMES.
IF GRAVEL IS PRESENT IN APPRECIABLE AMOUNTS THE TERM "GRAVELLY" MAY BE ADDED TO THE CLASS NAME, VIZ, "GRAVELLY SAND". THE TERMS "COARSE", "MEDIUM" AND "FINE" WHEN USED TO DESCRIBE SAND, SILT AND GRAVEL REFER TO STANDARD GRADE SIZE LIMITS.

LEGEND OF EARTH MATERIALS

GRAVEL	SILTY CLAY OR CLAYEY SILT
SAND	PEAT AND/OR ORGANIC MATTER
SILT	FILL MATERIAL
CLAY	IGNEOUS ROCK
SANDY CLAY OR CLAYEY SAND	SEDIMENTARY ROCK
SANDY SILT OR SILTY SAND	METAMORPHIC ROCK

LEGEND OF BORING OPERATIONS

- PLAN OF ANY BORING
- PENETROMETER
- 2½" CONE PENETROMETER
- SAMPLER BORING (DRY)
- ROTARY BORING (WET)
- AUGER BORING (DRY)
- JET BORING
- CORE BORING
- TEST PIT



NOTES

The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans.
Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

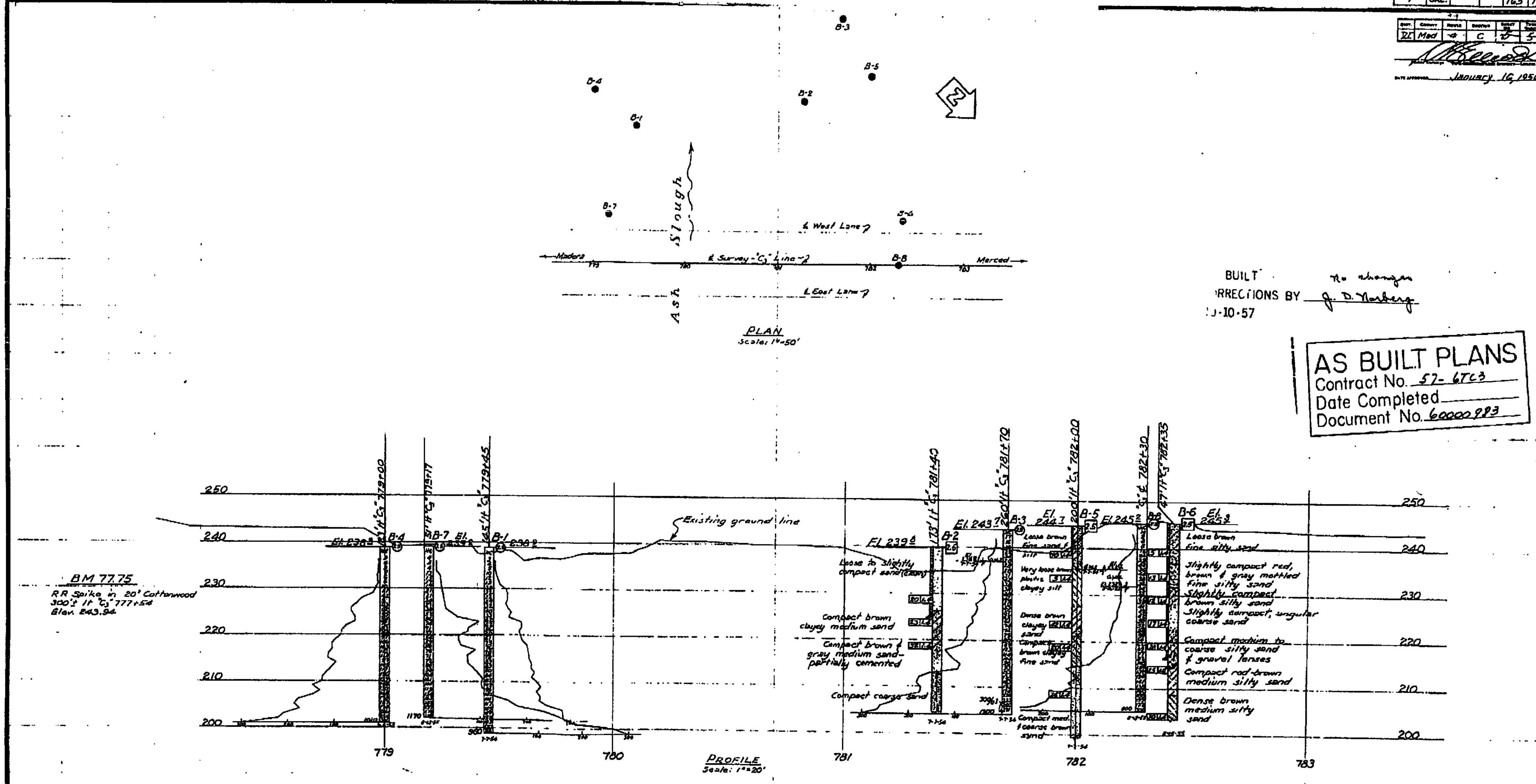
ASH SLOUGH BRIDGE (WIDEN)

LOG OF TEST BORINGS 2 of 2

SCALE As shown — BRIDGE 41-45 R/L — FILE E-41 — DRAWING C-3396-5

Sheet No. 11 of 11

PR-3396-5



BUILT — No changes
CORRECTIONS BY J. D. Norberg
1-10-57

AS BUILT PLANS
Contract No. 57-6TC3
Date Completed ______
Document No. 60000983

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
7	CAL.			165	177

DIST.	COUNTY	ROUTE	SECTION	SHEET NO.	TOTAL SHEETS
VI	Mad	4	C		5

DATE APPROVED January 16, 1956

BRIDGE DEPARTMENT

CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

DIAGRAM SHOWING THE BASIS FOR ESTIMATES OF GRADE SIZE DISTRIBUTION USED IN DETERMINATION OF CLASS NAMES. IF GRAVEL IS PRESENT IN APPRECIABLE AMOUNTS THE TERM "GRAVELLY" MAY BE ADDED TO THE CLASS NAME, VIZ. "GRAVELLY SAND". THE TERMS "COARSE", "MEDIUM" AND "FINE" WHEN USED TO DESCRIBE SAND, SILT AND GRAVEL REFER TO STANDARD GRADE SIZE LIMITS.

LEGEND OF EARTH MATERIALS

Gravel · Sand · Silt · Clay · Sandy Clay or Clayey Sand · Sandy Silt or Silty Sand · Silty Clay or Clayey Silt · Peat and/or Organic Matter · Fill Material · Igneous Rock · Sedimentary Rock · Metamorphic Rock

LEGEND OF BORING OPERATIONS

Plan of any boring · Penetrometer · 2½" Cone Penetrometer · Sampler boring (dry) · Rotary boring (wet) · Auger boring (dry) · Jet boring · Core boring · Test pit

1" Soil Tube · Rotary Boring · Penetration Boring

NOTES

The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans.
Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

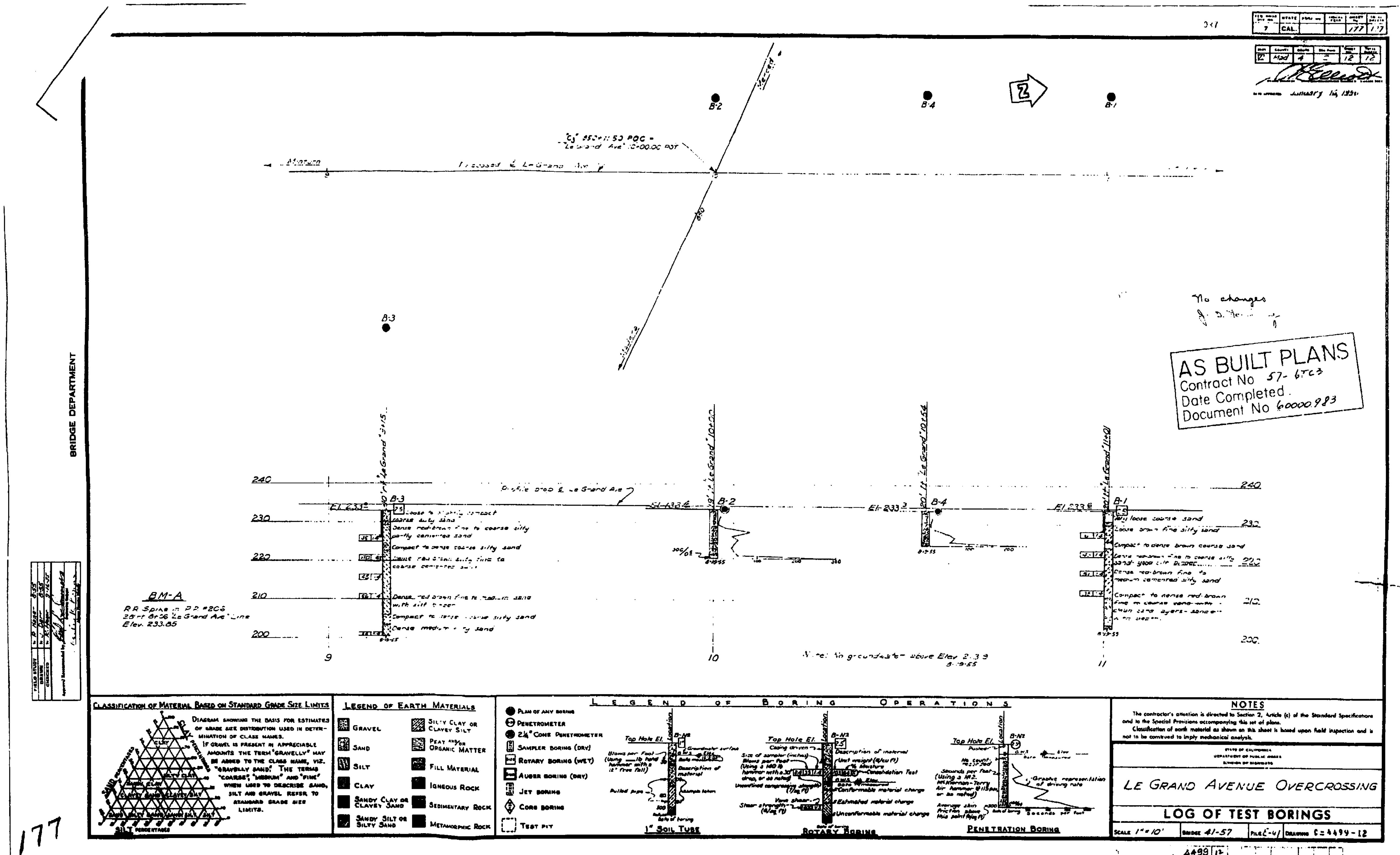
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

BRIDGE ACROSS ASH SLOUGH

LOG OF TEST BORINGS

SCALE As shown | BRIDGE 41-45 R/L | FILE E-4 | DRAWING C-3396-5

PR-3396-5



NOTES

The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans.

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

LE GRAND AVENUE OVERCROSSING

LOG OF TEST BORINGS

SCALE 1" = 10'	BRIDGE 41-57	FILE £-41	DRAWING C-4499-12

4499 12

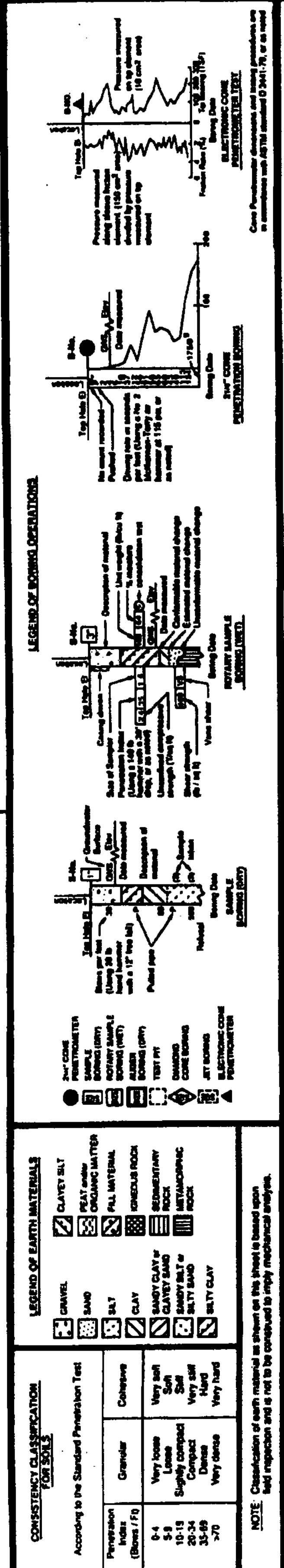
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad, Mer	99	29.2/29.4, 0.0/0.4	45	46

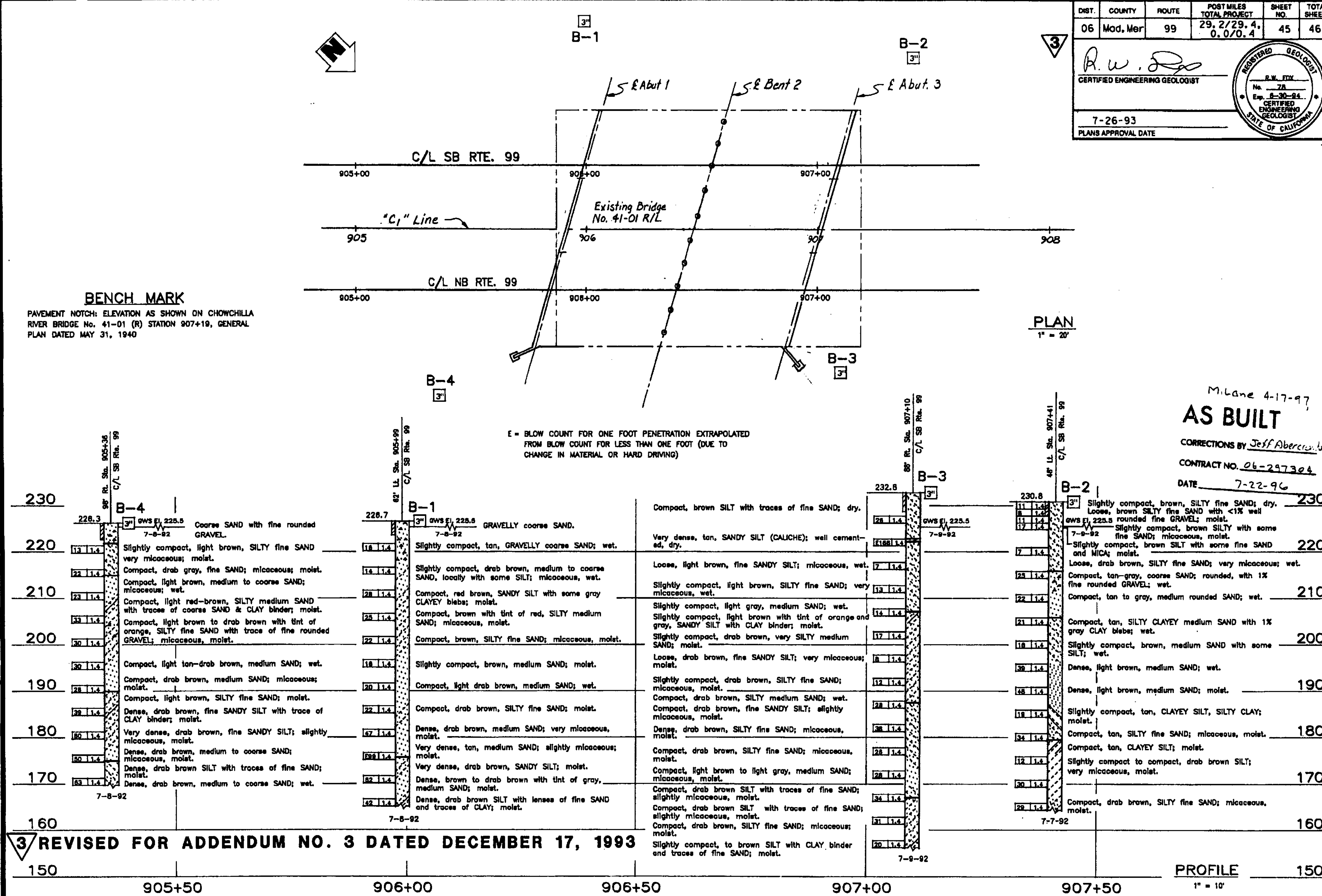
CERTIFIED ENGINEERING GEOLOGIST

7-26-93

PLANS APPROVAL DATE

REGISTERED GEOLOGIST R.W. FOX No. 78 Exp. 6-30-94 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA





3 REVISED FOR ADDENDUM NO. 3 DATED DECEMBER 17, 1993

M. Lane 4-17-97

AS BUILT

CORRECTIONS BY Jeff Abercrombie

CONTRACT NO. 06-297304

DATE 7-22-96

DIVISION OF NEW TECHNOLOGY, MATERIALS AND RESEARCH	OFFICE OF ENGINEERING GEOLOGY	FIELD INVESTIGATION BY:	State of CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES STRUCTURE DESIGN 4	BRIDGE NO. 41-01R/L	CHOWCHILLA RIVER BRIDGE
DRAWN BY I. GAMARRA 8/92		D. THOMAS			POST MILE 29.2	LOG OF TEST BORINGS
CHECKED BY						

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 06203
EA 297301

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 14 OF 14

TL 6081 REV 3/92

GEOTECHNICAL PROFESSIONAL

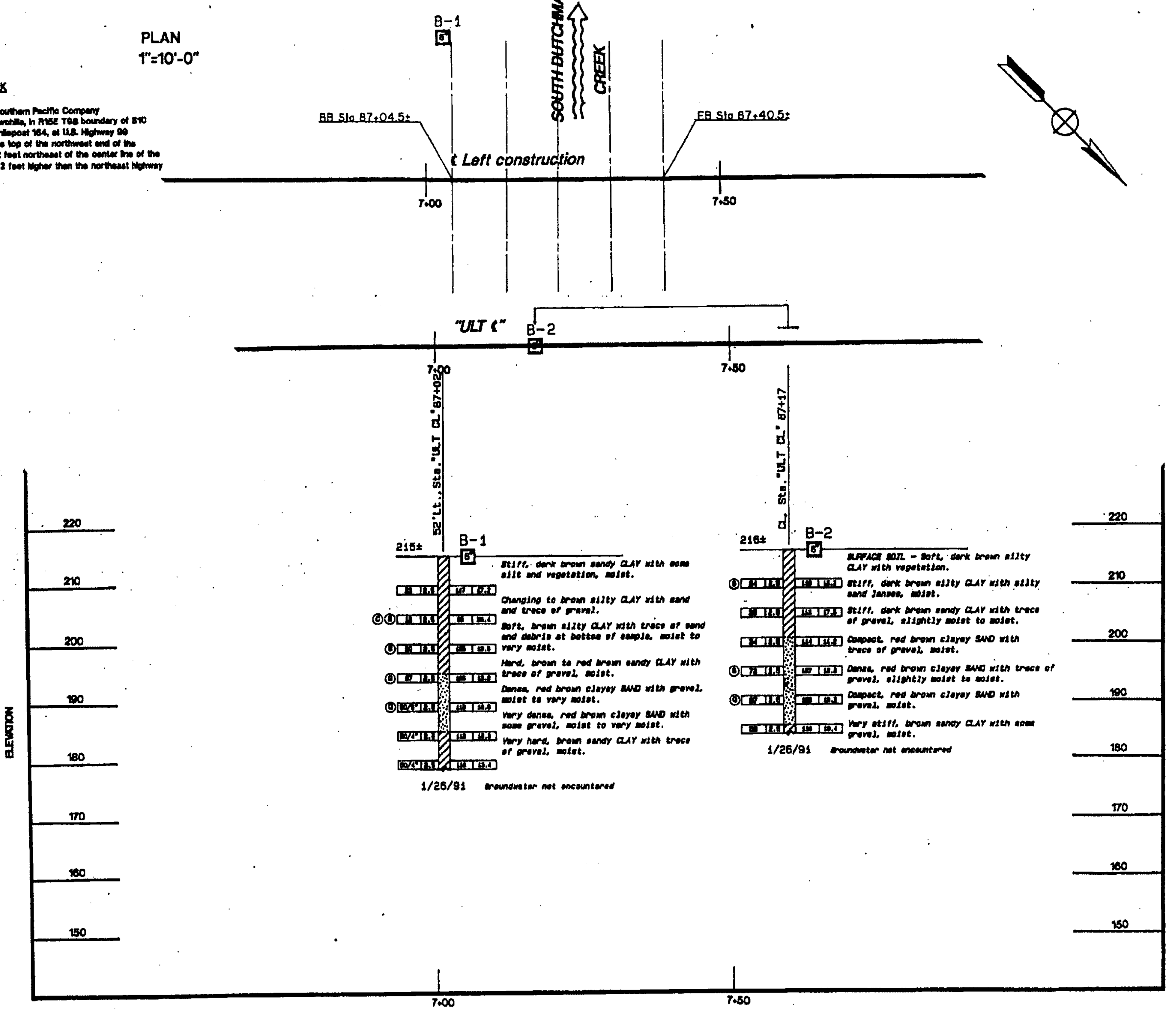
4-20-92

PLANS APPROVAL DATE

PLAN
1"=10'-0"

BENCH MARK

ELEV. 222.903
4.3 miles northwest along the Southern Pacific Company railroad from the station at Chowchilla, in R15E T9S boundary of S10 and S11, 0.2 mile northwest of milepost 164, at U.S. Highway 99 concrete bridge 39-106-R, in the top of the northwest end of the northeast concrete curb, 13 1/2 feet northeast of the center line of the northeast lanes, and about 3 1/2 feet higher than the northeast highway lanes.



PROFILE
HOR. 1"=10'-0"
VER. 1"=10'

NO AS BUILT CHANGES

AS BUILT

C.A. MALONEY

10-380404

9-9-93

PSC PROJECT # 90103.10

DRAWN BY

CHECKED BY

11-14-91

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PROJECT ENGINEER

FIELD INVESTIGATOR

BRIDGE NO.	
39-108L	SO. DUTCHMAN CREEK - LT BRIDGE (WIDEN)
POST MILE	
1.65	LOG OF TEST BORINGS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

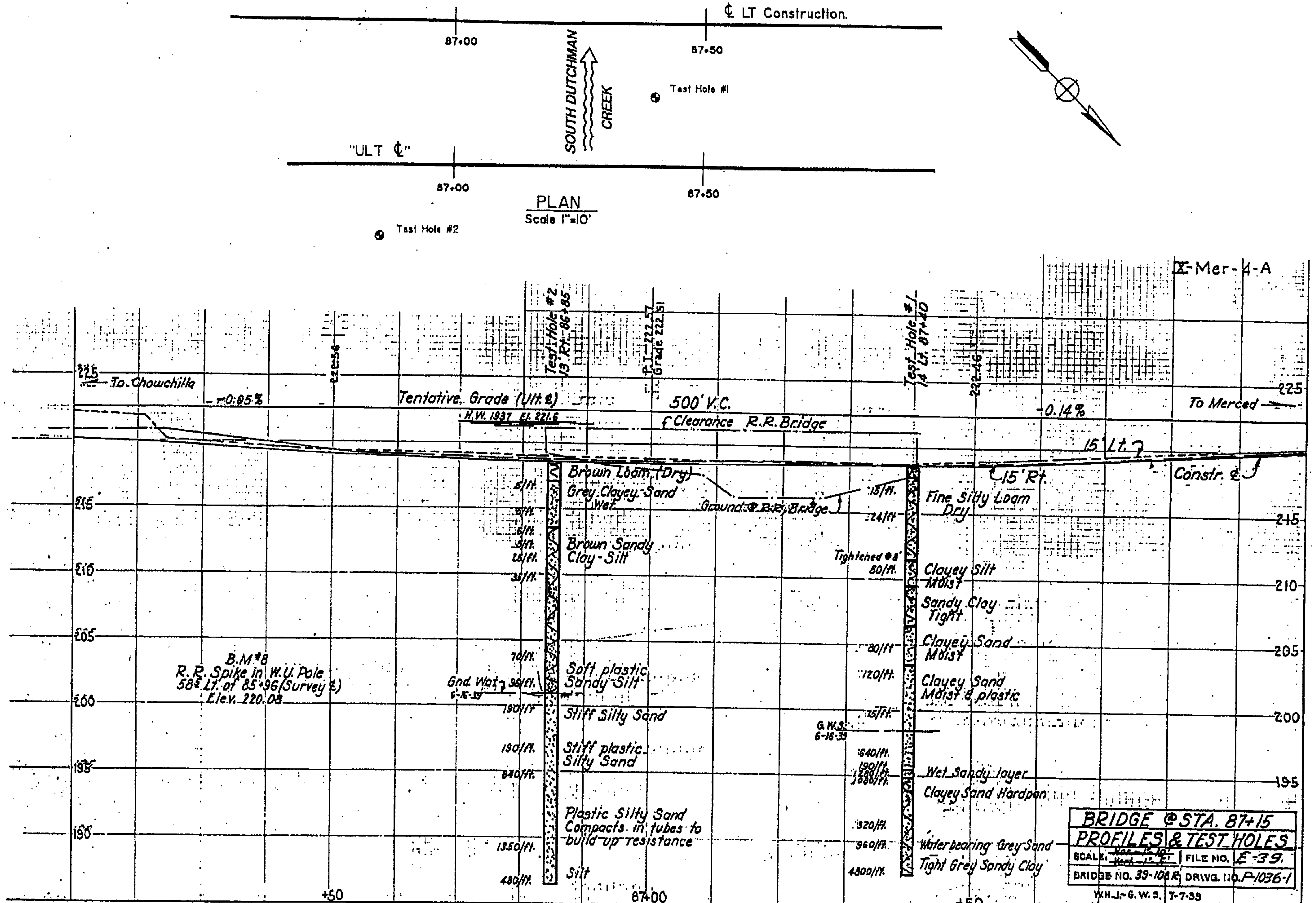
CU 10200
EA 380401

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 5 OF 6

PLATE 1



NO AS BUILT CHANGES

AS BUILT

C.A. MALONEY

10-380404

9-9-95

NOTE:
ADDITIONAL AS-BUILT FOUNDATION DATA MAY BE AVAILABLE AT THE DIVISION OF NEW TECHNOLOGY, MATERIALS AND RESEARCH 5900 FOLSOM BOULEVARD, SACRAMENTO, CALIFORNIA 95819

DESIGN	BY	CHECKED	
DETAILS	BY	CHECKED	
QUANTITIES	BY	CHECKED	

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

Jeffrey C. Dove
PROJECT ENGINEER

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 10200
EA 380401

BRIDGE NO. 39-108L
POST MILE 1.85

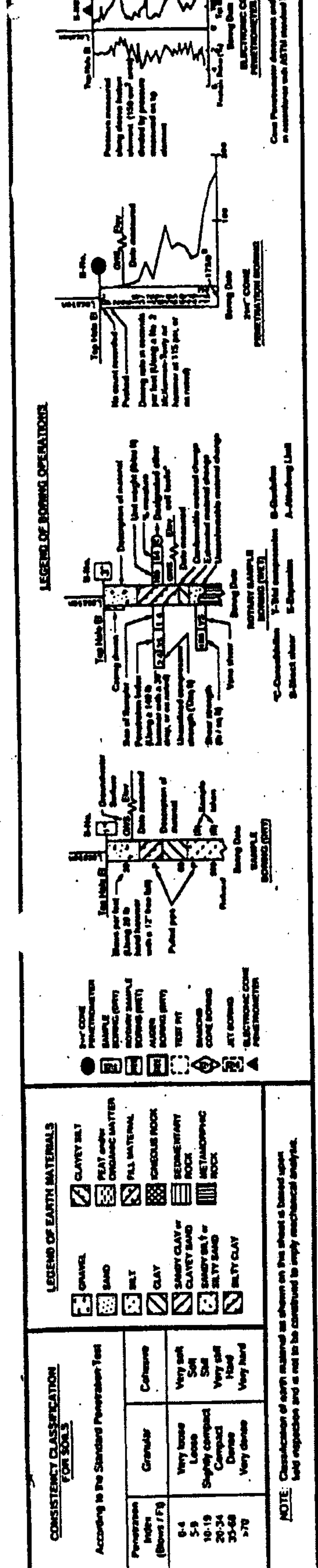
SO. DUTCHMAN CREEK - LT BRIDGE (WIDEN)

AS-BUILT LOG OF TEST BORINGS

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 6 OF 6

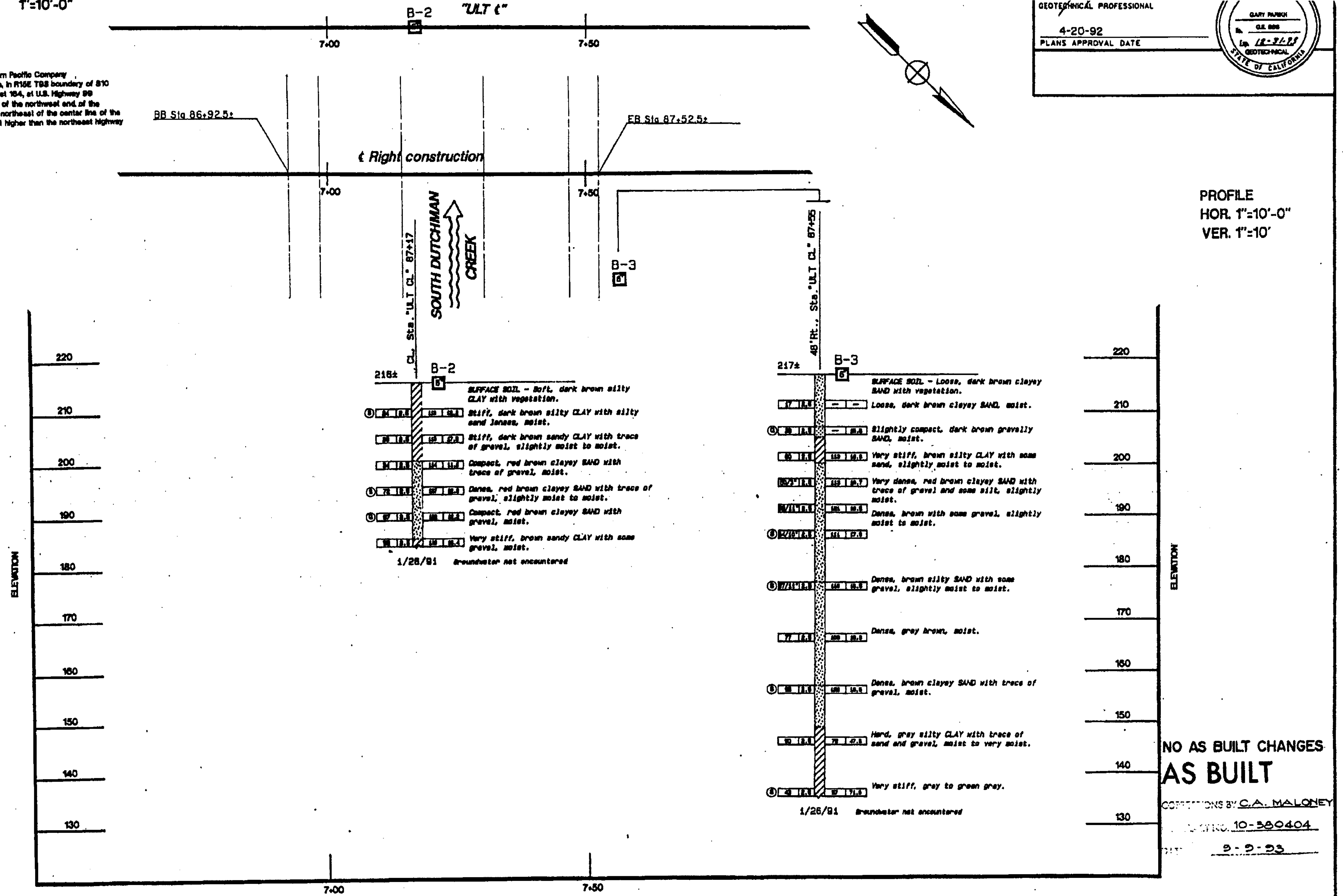


1"=10'-0"

BENCH MARK

ELEV. 222.903

4.3 miles northwest along the Southern Pacific Company railroad from the station at Chowchilla, in R15E T9S boundary of S10 and S11, 0.2 mile northwest of milepost 164, at U.S. Highway 99 concrete bridge 39-108-R, in the top of the northwest end of the northeast concrete curb, 13 1/2 feet northeast of the center line of the northeast lanes, and about 3 1/2 feet higher than the northeast highway lanes.



GEOTECHNICAL PROFESSIONAL

4-20-92

PLANS APPROVAL DATE

GARY PARIKH

GEOTECHNICAL

STATE OF CALIFORNIA

PROFILE

HOR. 1"=10'-0"

VER. 1"=10'

NO AS BUILT CHANGES

AS BUILT

CORRECTIONS BY C.A. MALONEY

CONTRACT NO. 10-380404

DATE 9-9-93

PSC PROJECT # 90103.10

DESIGN OVERSIGHT 11-14-91 SIGN OFF DATE	DRAWN BY / CHECKED BY	FIELD INVESTIGATOR / DATE	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION
PROJECT ENGINEER	BRIDGE NO. 39-108R	POST MILE 1.65	SO. DUTCHMAN CREEK - RT BRIDGE (WIDEN) — LOG OF TEST BORINGS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 10200

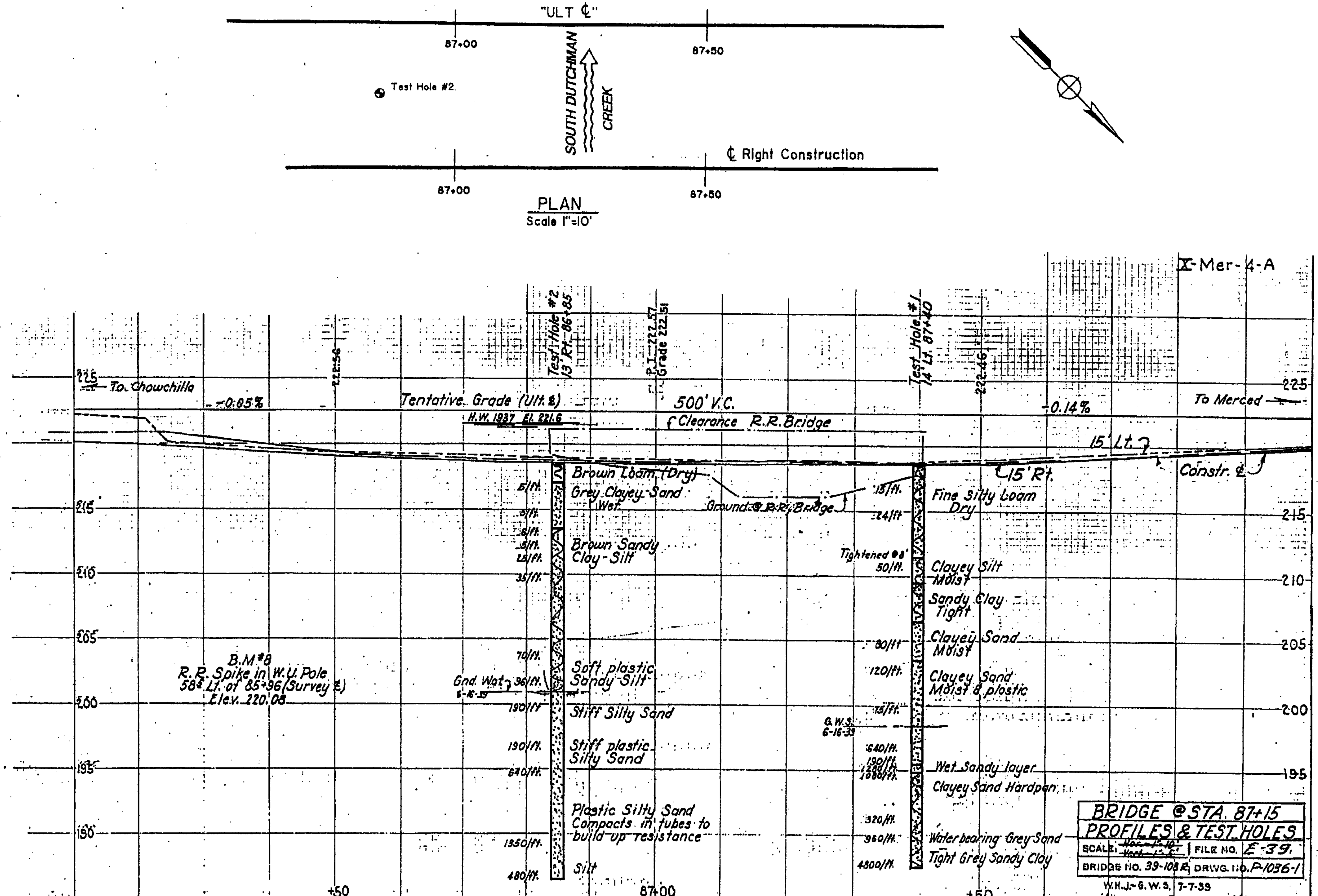
EA 380401

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 6 OF 7

PLATE 2



NO AS BUILT CHANGES

AS BUILT

CORRECTIONS BY C.A. MALONEY

10-380404

9-9-93

14-91	NOTE: ADDITIONAL AS-BUILT FOUNDATION DATA MAY BE AVAILABLE AT THE DIVISION OF NEW TECHNOLOGY, MATERIALS AND RESEARCH 5900 FOLSOM BOULEVARD, SACRAMENTO, CALIFORNIA 95819	DESIGN / DETAILS / QUANTITIES	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

Jeffrey C. Dove
PROJECT ENGINEER

BRIDGE NO. 39-108R

POST MILE 1.65

SO. DUTCHMAN CREEK - RT BRIDGE (WIDEN)

AS-BUILT LOG OF TEST BORINGS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 10200
EA 380401

DISREGARD PRINTS BEARING EARLIER REVISION DATES

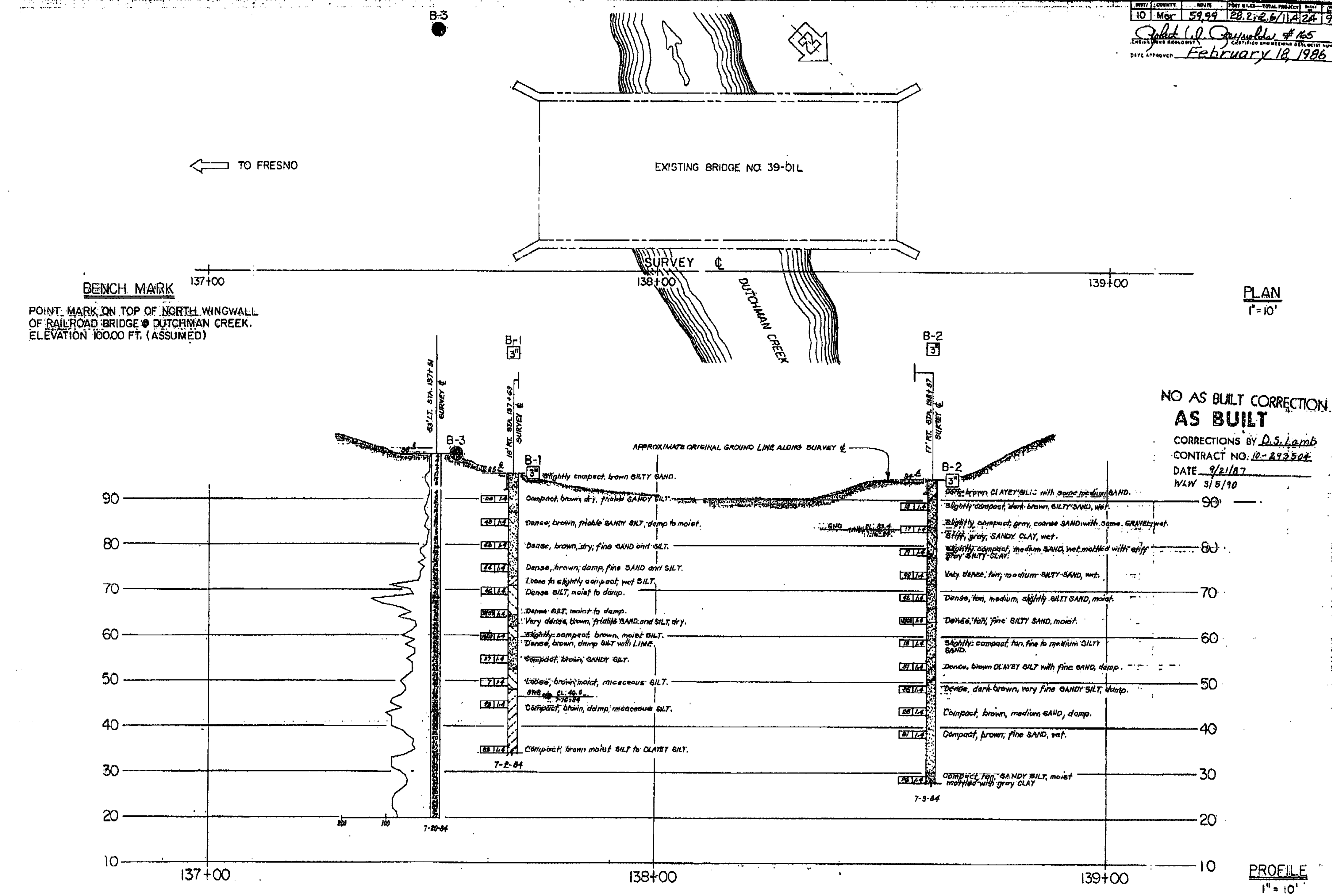
REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 7 OF 7

DIST	COUNTY	ROUTE	POST MILES—TOTAL PROJECT	SHEET	TOTAL SHEETS
10	Mer	59,99	28.2;2.6/11.4	24	95

CERTIFIED ENGINEERING GEOLOGIST: Robert J. Reynolds #165

DATE APPROVED: February 18, 1986



NO AS BUILT CORRECTION

AS BUILT

CORRECTIONS BY D.S. Lamb

CONTRACT NO. 10-293504

DATE 9/21/87

WLW 3/5/90

GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY

DRAWN BY: LEONY L. LOPEZ 5/84

CHECKED BY: R. Hagar

State of **CALIFORNIA** DEPARTMENT OF TRANSPORTATION

STRUCTURES - DESIGN

BRIDGE NO. 39-01 L

POST MILE 2.62

DUTCHMAN CREEK BRIDGE (REPLACE)

LOG OF TEST BORINGS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU 10200
WO 293501

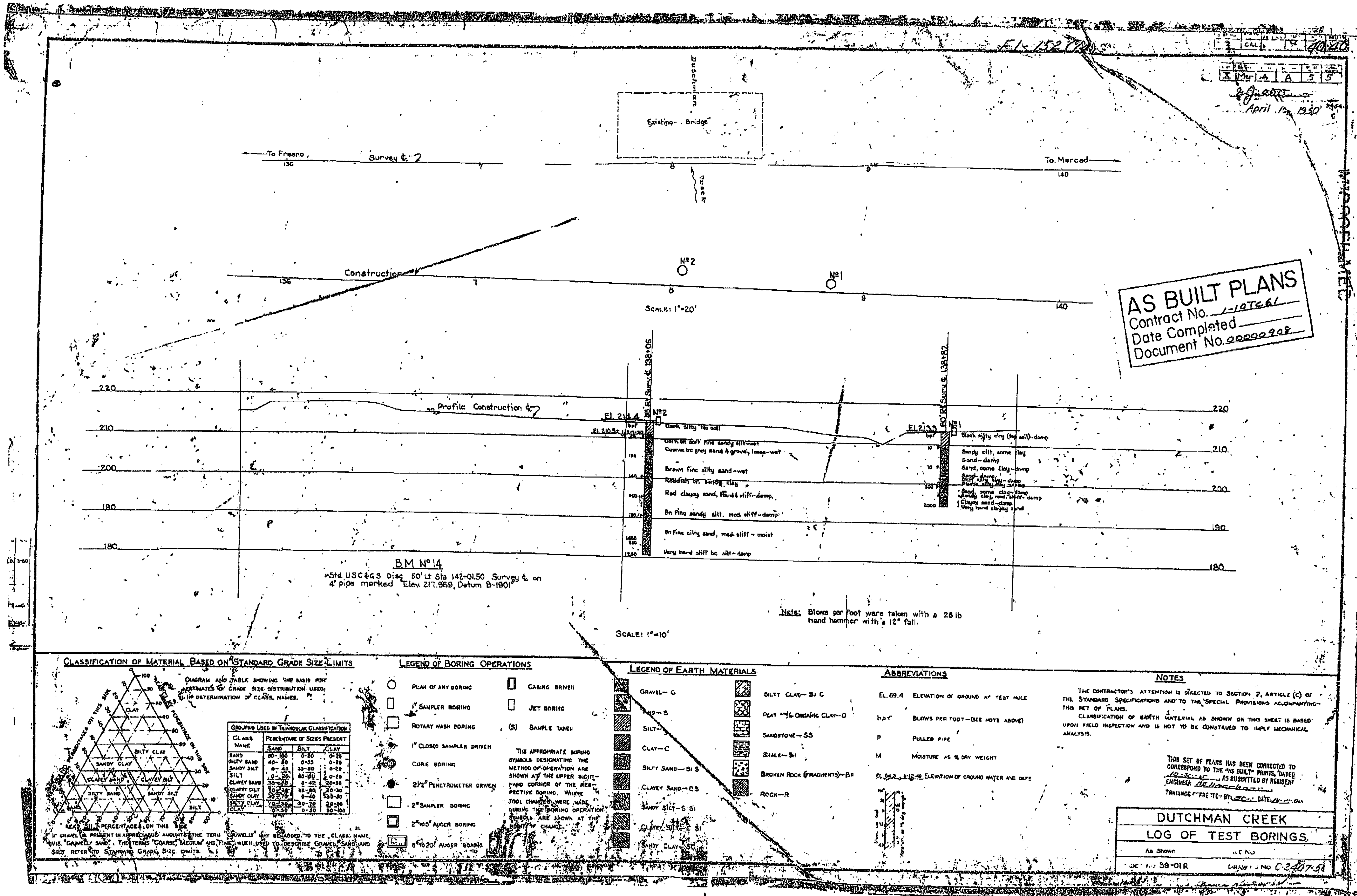
Discard prints bearing earlier revision dates

SHEET 6 OF 7

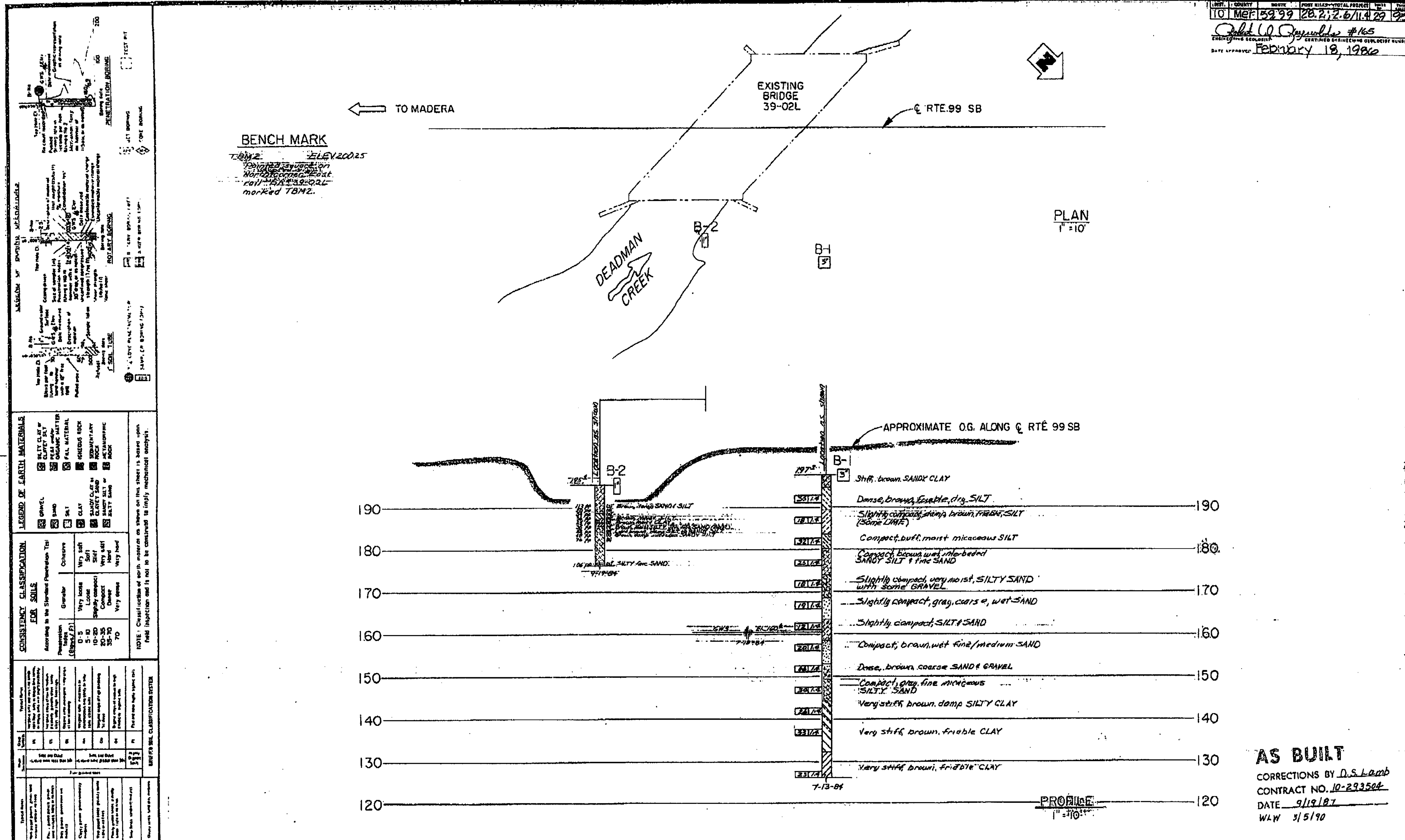
AS BUILT PLANS
Contract No. 10-293504
Date Completed 9-21-87
Document No.

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF TRANSPORTATION.

4-12-90 — SUPERVISOR OF MICROFILM SERVICES



ClibPDF - www.fastio.com



AS BUILT
CORRECTIONS BY D.S. Lamb
CONTRACT NO. 10-293504
DATE 9/19/87
WLW 3/5/90

GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY			State of CALIFORNIA DEPARTMENT OF TRANSPORTATION	STRUCTURES - DESIGN	BRIDGE NO. 39-02L	DEADMAN CREEK BRIDGE (REPLACE)
DRAWN BY JKD 10/84	R.F. Hagen 778	22013		19815	POST MILE 5.2	LOG OF TEST BORINGS
CHECKED BY R. Hagen						

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 10200
WO 293501

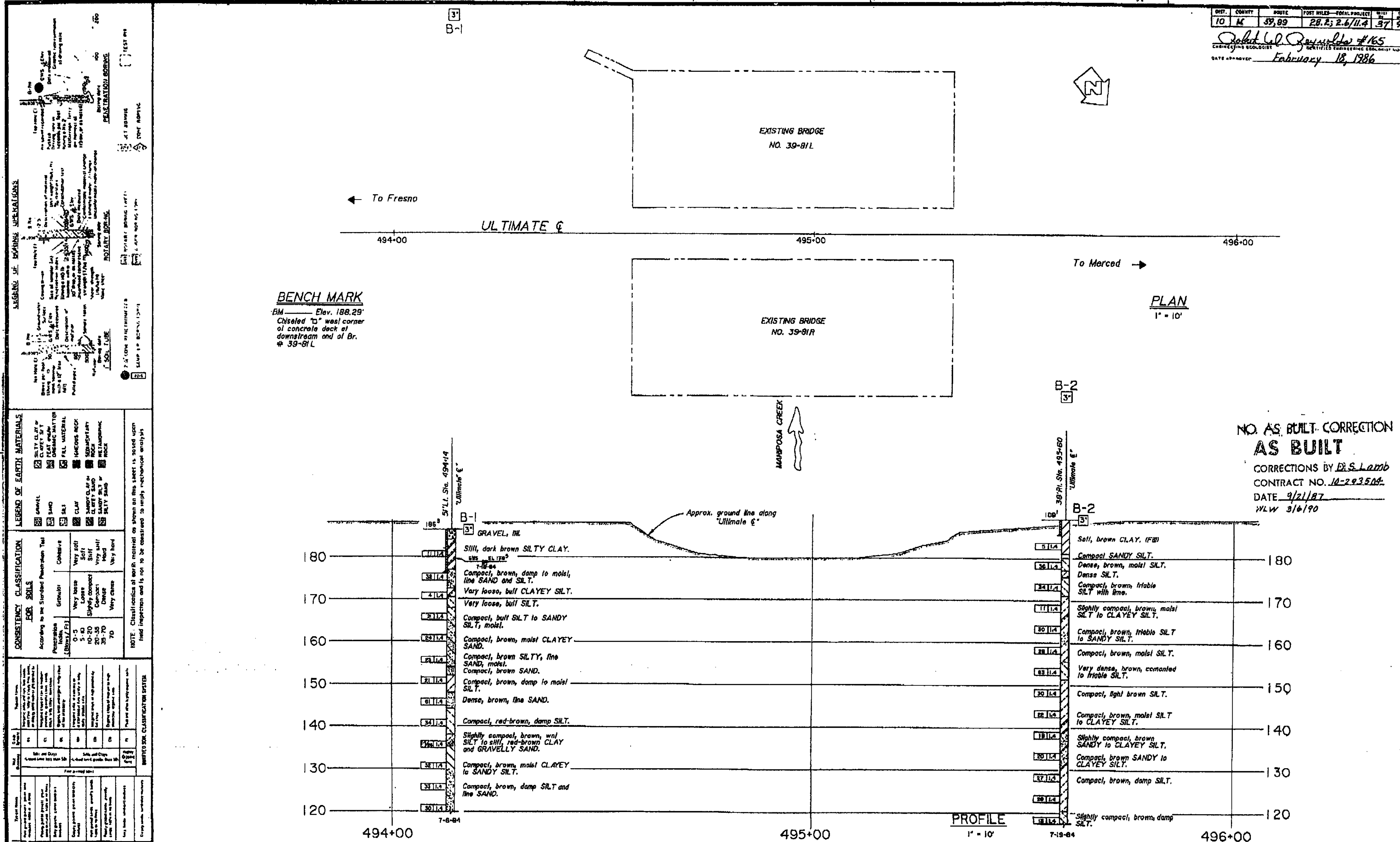
Disregard prints bearing earlier revision dates →

SHEET 4 OF 4

AS BUILT PLANS
Contract No. 10-293504
Date Completed 7/2/87
Document No.

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF TRANSPORTATION.
SUPERVISOR OF MICROFILM SERVICES

MICROFILM - STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - MICROFILM SCALE 1" = 20'



DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
10	M	59,99	28.2; 2.6/11.4	37	95

Robert W. Reynolds #165
ENGINEERING GEOLOGIST — CERTIFIED ENGINEERING GEOLOGIST NUMBER
DATE APPROVED February 18, 1986

GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY

DRAWN BY — CHECKED BY

State of CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURES - DESIGN 3

BRIDGE NO. 39-81R/L
POST MILE 9.35

MARIPOSA CREEK BRIDGE (WIDEN)
LOG OF TEST BORINGS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU 10
WO 293501

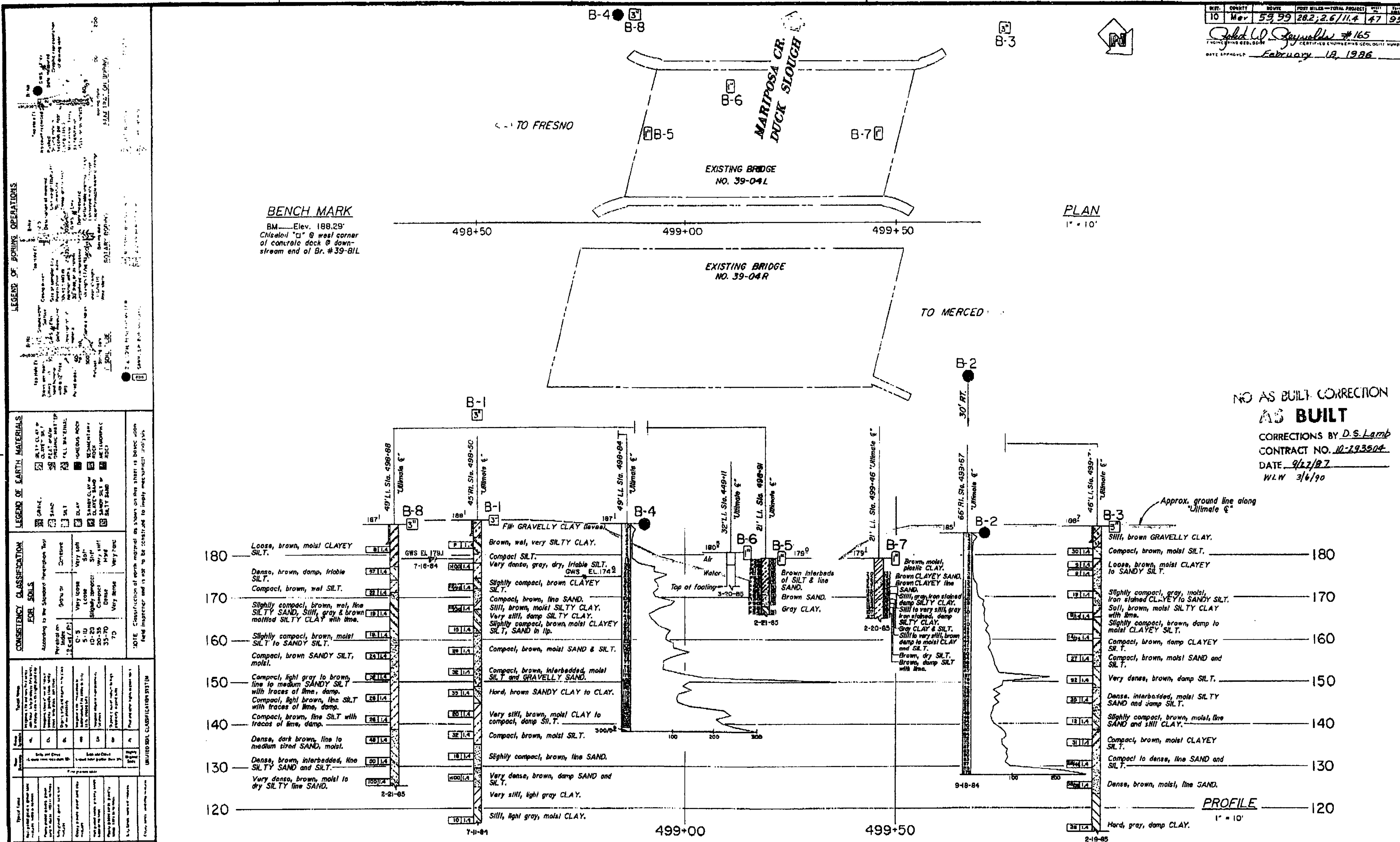
SHEET 8 OF 9

AS BUILT PLANS
Contract No. 10-293504
Date Completed 9-21-87
Document No.

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF TRANSPORTATION.

DIST.	COUNTY	ROUTE	POST MILES—TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
10	Mer	59, 99	28.2; 2.6/11.4	47	95

Robert W. Reynolds #165
CERTIFIED ENGINEERING GEOLOGIST
DATE APPROVED February 12, 1986



NO AS BUILT CORRECTION

AS BUILT
CORRECTIONS BY D.S. Lamb
CONTRACT NO. 10-293504
DATE 9/17/87
WLW 3/6/90

GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY		State of CALIFORNIA DEPARTMENT OF TRANSPORTATION	STRUCTURES - DESIGN	BRIDGE NO. 39-04	DUCK SLOUGH BRIDGE (WIDEN)
DRAWN BY: RIMA HOWELL 10/84	R. F. Hagen 770		Tom Zuala 19,815	POST MILE 9.43	LOG OF TEST BORINGS
CHECKED BY: R. Hagen			PROJECT ENGINEER		

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

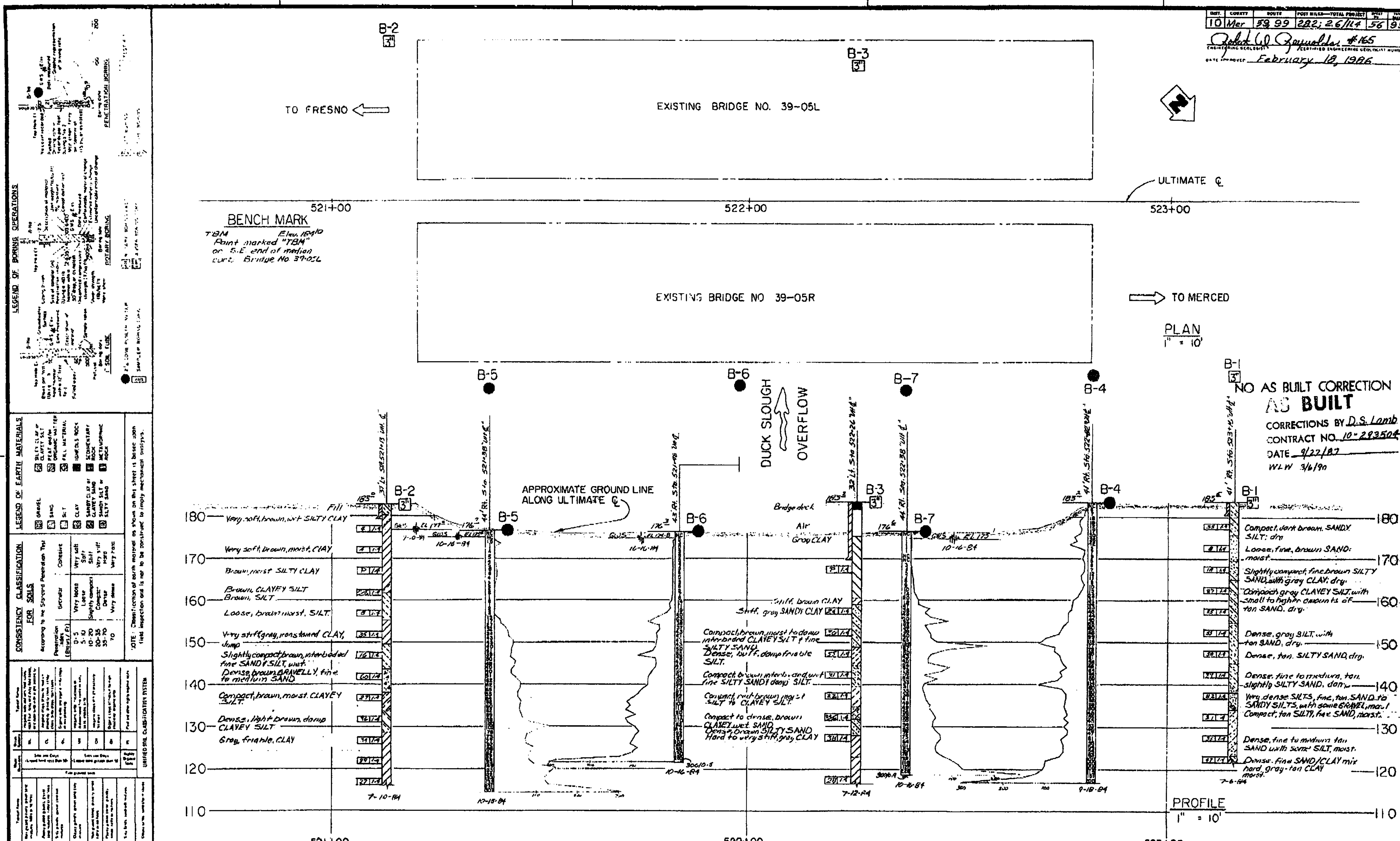
CU 10
WO 293501

SHEET 9 OF 10

47

AS BUILT PLANS
Contract No. 10-293504
Date Completed 9-21-87
Document No.

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF TRANSPORTATION
4-12-90 Donald Blackford



GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY

DRAWN BY JKD 11/84

CHECKED BY R. Hagar

R. F. Hagar 778 — 22013

State of CALIFORNIA DEPARTMENT OF TRANSPORTATION

STRUCTURES - DESIGN

BRIDGE NO. 39-05 — POST MILE 9.86

DUCK SLOUGH OVERFLOW (WIDEN)

LOG OF TEST BORINGS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU 10 WO293501

SHEET 8 OF 9

56

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THE DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF TRANSPORTATION.

1-12-90 — SUPERVISOR OF MICROFILM SERVICES

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT
10	MER	99	

DIVISION OF ENGINEERING SERVICES - GEOTECHNICAL SERVICES

As-Built Log of Test Borings sheet is considered an informational document only. As such, the State of California registration seal with signature, license number and registration certificate expiration date confirm that this is a true and accurate copy of the original document. This drawing is available and presented only for the convenience of any bidder, contractor or other interested party.

DIST.	COUNTY	ROUTE	KILOMETER POST-TOTAL PROJECT	Sheet No.	Total Sheets
10	Mer	99	16.4/20.6	644	656

CERTIFIED ENGINEERING GEOLOGIST — DATE

OWENS CREEK BR @ HWY 99

LOG OF TEST BORINGS 2 OF 2

NOTE: A COPY OF THIS LOG OF TEST BORINGS IS AVAILABLE AT OFFICE OF STRUCTURE MAINTENANCE AND INVESTIGATIONS, SACRAMENTO, CALIFORNIA

CU: 10
EA: 363101

BRIDGE No. 39-0006R/L

Sheet 15 of 15

To accompany plans dated 5-20-05

REGISTERED GEOLOGIST
Claudio Aylio
No. 2208
Exp. 9-30-03
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

BENCH MARK

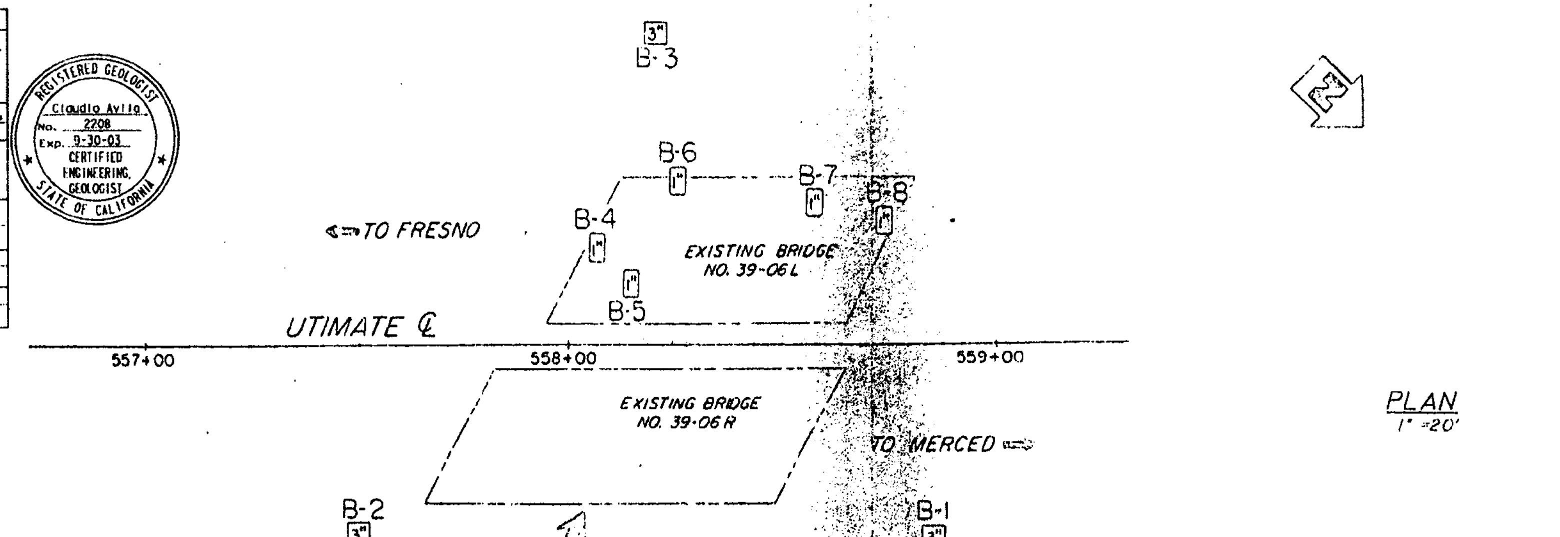
BM — Elev. 184.93
White paint mark and the number "28" on outside of westerly rail near the S. abutment of bridge 39-06L

Revisions made to this Log of Test Borings from the original 1985 Log of Test Borings are the addition of the following table and notes:

Boring	Station	Offset from C/L Rte. 99
B-1	106+11	23.0 m Rt
B-2	105+68.5	23.0 m Rt
B-3	105+91	58.5 m Lt
B-4	105+86	43.5 m Lt
B-5	105+90	40.0 m Lt
B-6	105+93.5	47.0 m Lt
B-7	106+01	39.5 m Lt
B-8	106+07	45.0 m Lt

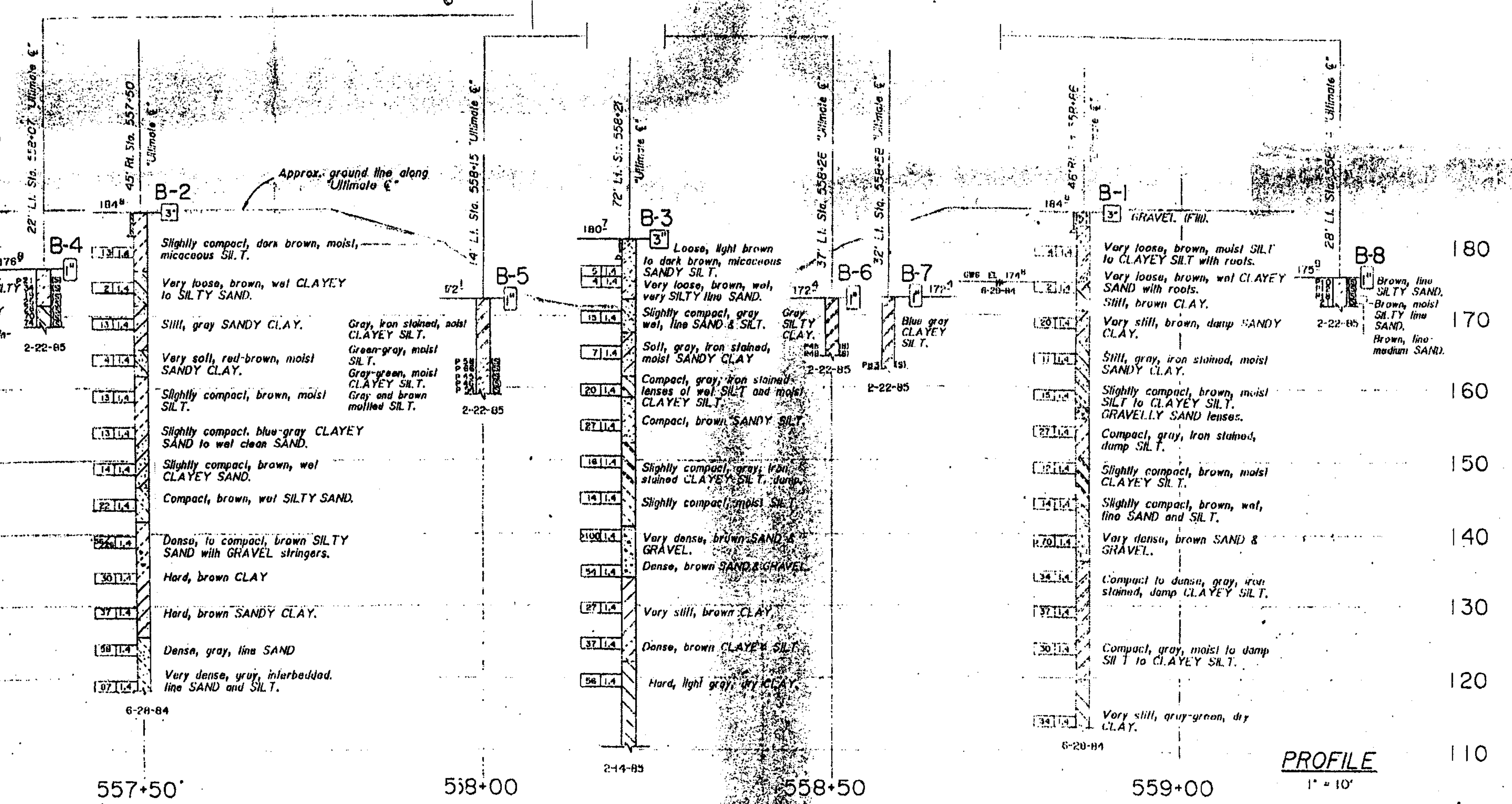
Notes:

1. See the General Plan and/or Foundation Plan for Metric Stationing.
2. Structure Design produced the data presented in the table above. The data are the metric locations for the As-Built Test Borings referenced to the proposed new structure location. This table is presented on the As-Built Log of Test Boring sheet for the convenience of any bidder, contractor or other interested party.



PLAN

1" = 20'



PROFILE

1" = 10'

GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY

DRAWN BY IRMA HOWELL 9/10/84
CHECKED BY
PROJECT GEOLOGIST
ENGINEERING GEOLOGIST

State of CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURES - DESIGN

BRIDGE NO. 39-06R
POST MILE 10.6

OWENS CREEK BRIDGE (WIDEN)

LOG OF TEST BORINGS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2

CU 10
WO 293501

eir-zlotb2.tif

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Mer	99	16.4/20.6	643	656

Caltrans Metric

Claudio Avila 6-5-03
CERTIFIED ENGINEERING GEOLOGIST

REGISTERED GEOLOGIST Claudio Avila No. 2208 Exp. 9-30-03 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

6-20-05
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

BENCH MARK

BM CM 105 Elev. 55.95 m
3/4 inch rebar

15°21'46" Skew

To Lingard

C/L FR-1

N 44°29'28" W

18+20 +40 +60 +80

B-02-1
94 mm

OWENS CREEK

To Merced

5.33 m Rt. Sta. 18+30.67
C/L FR-1

PLAN
1:200

Notes: qu=unconfined compressive strength using a pocket penetrometer.

B-02-1
94 mm

55.06

SANDY SILT (ML), loose, very dark grayish brown, moist.

SILTY fine SAND (SM), loose, brown, moist.

GWS EL. 51.70
9-5-02

SILTY fine SAND with CLAY (SM), loose, dark brown, wet.

Lean CLAY with SAND (CL), stiff, gray, moist. qu=143 kPa

CLAYEY SAND (SC), loose, olive gray.

Lean CLAY with SAND (CL), stiff, olive gray, moist. qu=215 kPa

Lean CLAY with fine SAND (CL), soft, pale olive.

SANDY lean CLAY (CL), soft, pale olive, moist to wet.

Lean CLAY with fine SAND (CL), soft, olive, wet. qu=24 kPa

SANDY lean CLAY (CL), soft, olive, wet. qu=0.0 kPa

152.4 mm layer of poorly graded fine to medium SAND at elev. 46.37 m.

Lean CLAY (CL), firm, olive, moist. qu=143 kPa

Poorly graded fine SAND with SILT (SP-SM), medium dense, dark greenish gray, wet.

Poorly graded fine SAND (SP), dense, dark yellowish gray, wet.

Well graded fine to coarse GRAVEL with SILT and SAND (GW-GM), dense, very dark grayish brown and other various colors, wet, GRAVEL up to 50 mm, subrounded to subangular.

Poorly graded fine SAND with CLAY (SP-SC), dense, light olive brown, wet.

Some GRAVEL.

Poorly graded fine and medium SAND (SP), very dense, grayish brown, wet.

Fat CLAY (CH), hard, light yellowish brown, moist, weak cementation. qu=325 kPa

Fat CLAY (CH), very stiff, hard, yellowish gray, moist, weak cementation. qu=310 kPa

Lean CLAY (CL), very stiff, light olive gray, moist, some weak cementation.

Poorly graded SAND with SILT (SP-SM), dense, light olive gray, moist to wet, medium to coarse SAND with fine GRAVEL.

8-14-02

Blow counts: 7 35, 9 35, 4 35, 5 35, 4 35, 7 35, 23 35, 45 35, 50 35, 51 35, 44 35, 27 35, 22 35, 30 35, 82 35, 30 35, 37 35

Elevations: 54 m, 51 m, 48 m, 45 m, 42 m, 39 m, 36 m, 33 m, 30 m, 27 m, 24 m

18+20 18+40 18+60

PROFILE
HOR. 1:100
VER. 1:100

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

ENGINEERING SERVICES	GEOTECHNICAL SERVICES	FIELD INVESTIGATION BY:	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES STRUCTURE DESIGN 6	BRIDGE NO. 39-0006R/L	OWENS CREEK BRIDGE
DRAWN BY W. Tang 05/03		J. Kaump			KILOMETER POST 16.98	LOG OF TEST BORINGS 1 OF 2
CHECKED BY C. Avila				CU 10 EA 363111		

OGS GEOLOGIST LOG OF TEST BORINGS SHEET (METRIC) (REV. 3/02)

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

DISREGARD PRINTS BEARING EARLIER REVISION DATES

14 15

AS BUILT CORRECTIONS

CONTRACT NO. 10-363114

TRANSFER DATE: 4-25-20
FIELD CORRECTION DATE: 6-4-2007
CORRECTIONS TRANSFERED BY: SP

LEGEND OF BORING OPERATIONS

LEGEND OF EARTH MATERIALS

CONSISTENCY CLASSIFICATION FOR SOILS

Caltrans Metric

Claudio Avila 6-5-03
CERTIFIED ENGINEERING GEOLOGIST

REGISTERED GEOLOGIST Claudio Avila No. 2208 Exp. 9-30-03 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

6-20-05
PLANS APPROVAL DATE

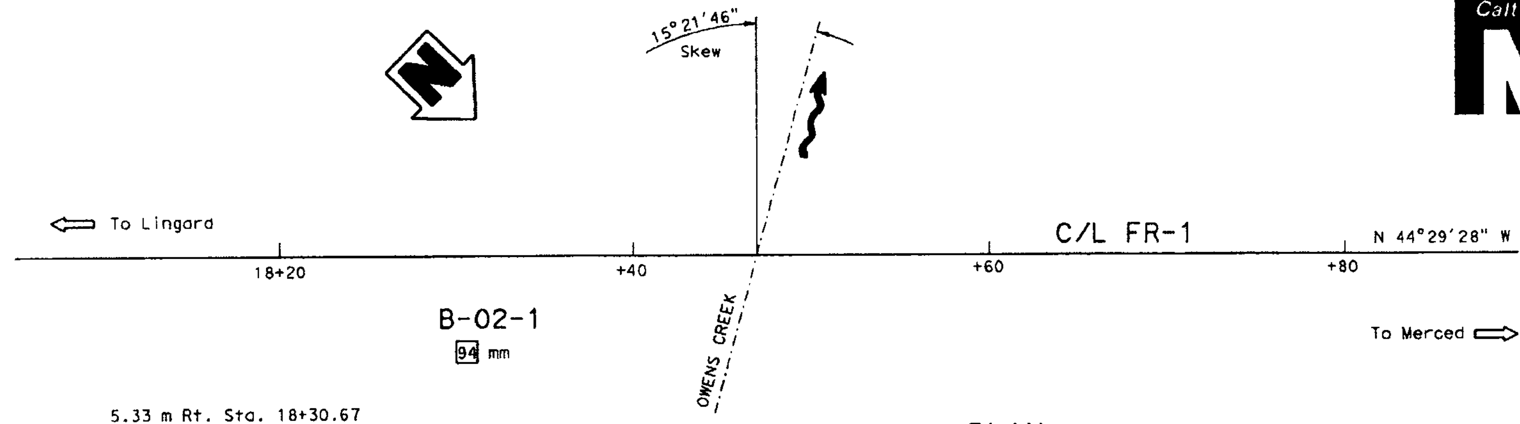
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

CONTRACT No. 10-3634
TRANSFER DATE: 4-25-20
FIELD CORRECTION DATE: 6-4-2001
CORRECTIONS TRANSFERED BY: SP
FIELD CORRECTIONS BY: P.Houd

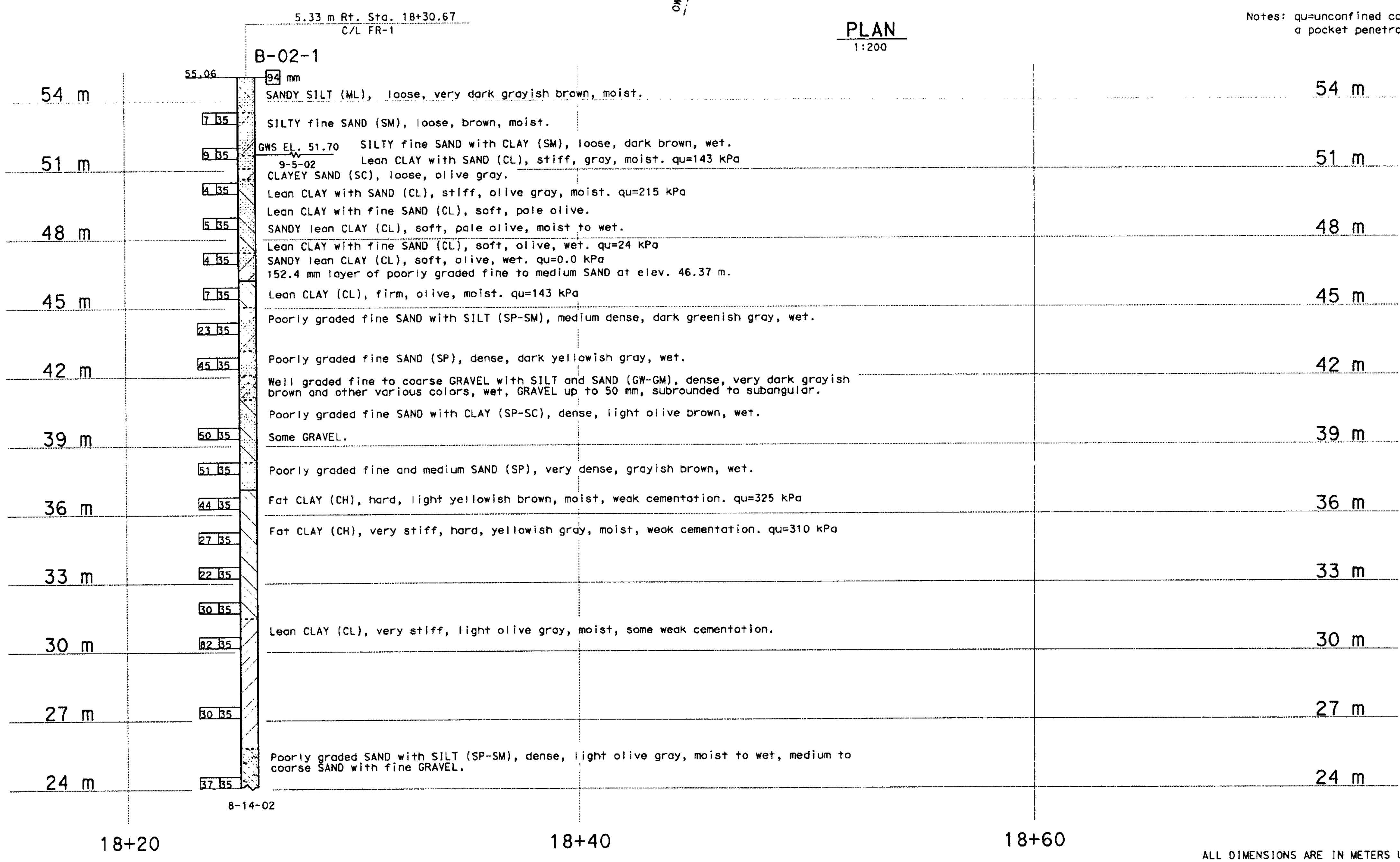
AS BUILT CORRECTIONS

BENCH MARK

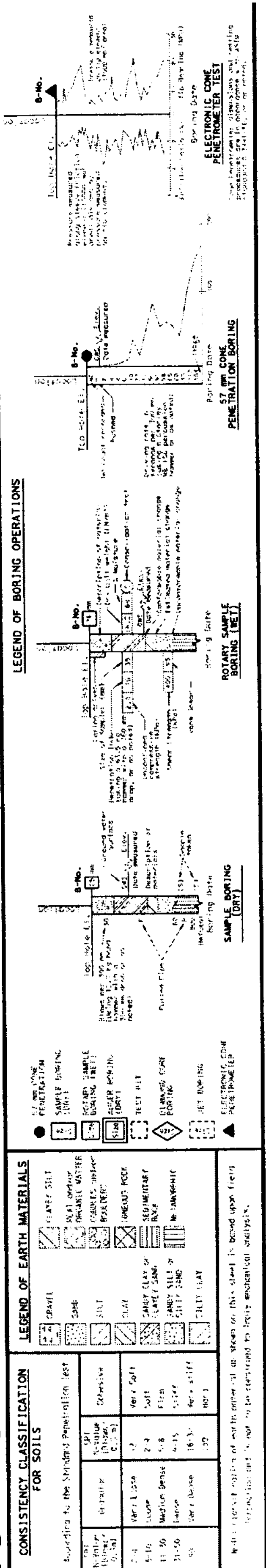
BM CM 105 Elev. 55.95 m
3/4 inch rebar



Notes: qu=unconfined compressive strength using a pocket penetrometer.



ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

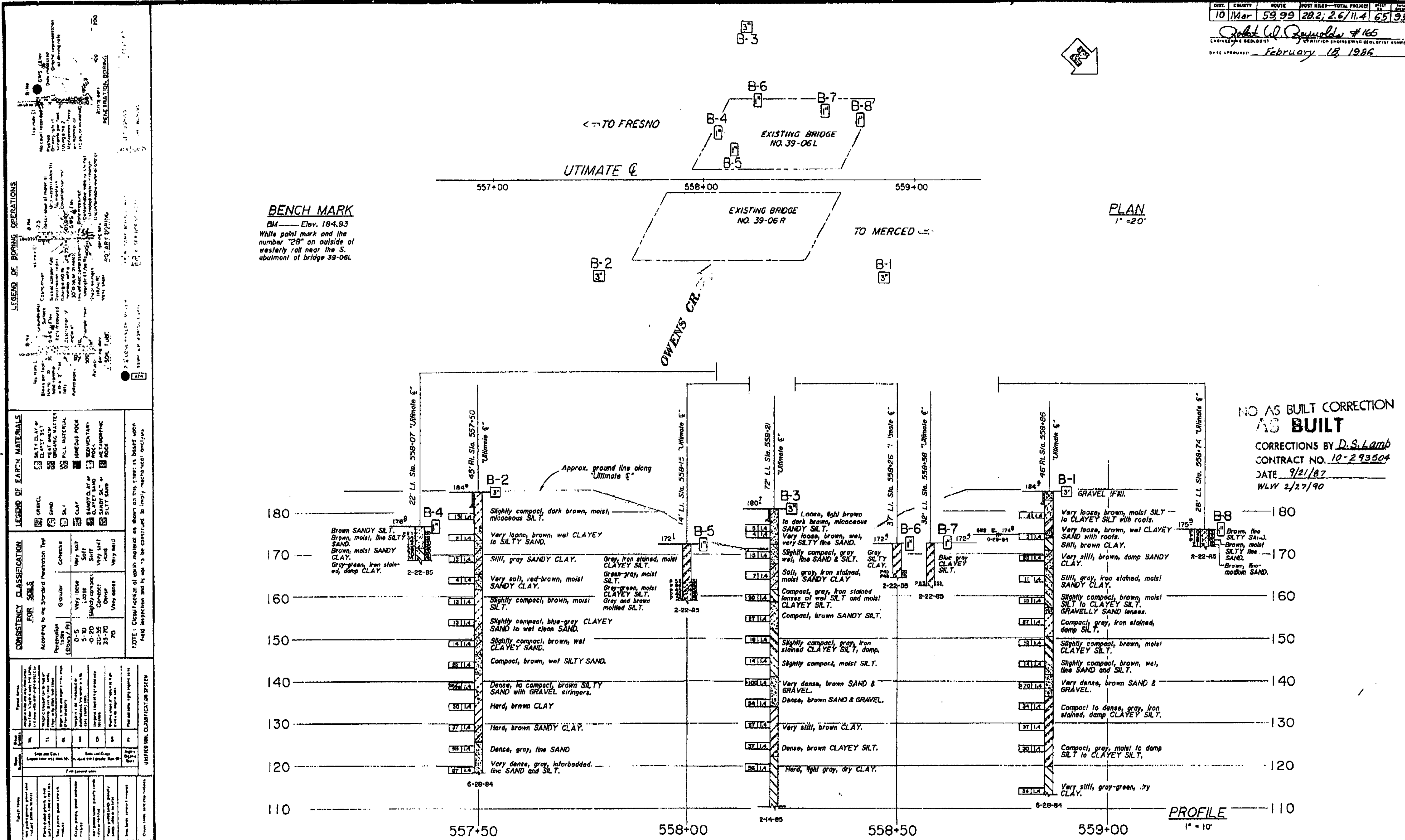


ENGINEERING SERVICES	GEOTECHNICAL SERVICES	FIELD INVESTIGATION BY:	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES STRUCTURE DESIGN 6	BRIDGE NO. 39-0006R/L	OWENS CREEK BRIDGE
DRAWN BY W. Tang 05/03		J. Kaump			KILOMETER POST 16.98	LOG OF TEST BORINGS 1 OF 2
CHECKED BY C. Avila				CU 10 EA 363111		14 15

OGS GEOLOGIST LOG OF TEST BORINGS SHEET (METRIC) (REV. 3/02)

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

DISREGARD PRINTS BEARING EARLIER REVISION DATES



DIST.	COUNTY	ROUTE	POST MILES—TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
10	Mer	59,99	28.2; 2.6/11.4	65	95

Robert W. Reynolds #165
ENGINEERING GEOLOGIST
DATE APPROVED February 18, 1986

GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY

DRAWN BY: EMA HOWELL 10/84
CHECKED BY: R. Hogan

State of CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURES - DESIGN 3

BRIDGE NO. 39-06 R
POST MILE 10.6

OWENS CREEK BRIDGE (WIDEN)

LOG OF TEST BORINGS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU 10
WO 293501

SHEET 8 OF 9

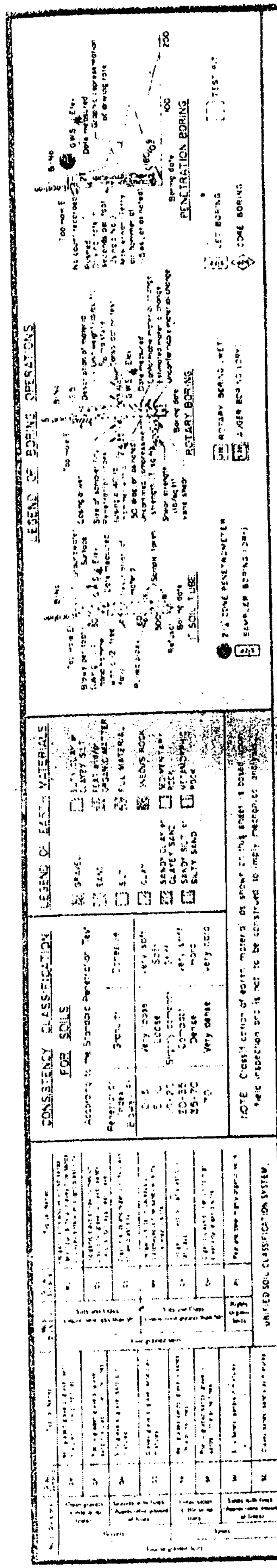
AS-BUILT PLANS
Contract No. 10-293504
Date Completed 9/21/87
Document No.

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THE DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF TRANSPORTATION.

4-12-90 Donald Blackford SUPERVISOR OF MICROFILM SERVICES

65

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
10	MER	99			



DIVISION OF ENGINEERING SERVICES - GEOTECHNICAL SERVICES

As-Built Log of Test Borings sheet is considered an informational document only. As such, the State of California registration seal with signature, license number and registration certificate expiration date confirm that this is a true and accurate copy of the original document. This drawing is available and presented only for the convenience of any bidder, contractor or other interested party.

DIST.	COUNTY	ROUTE	KILOMETER POST-TOTAL PROJECT	Sheet No.	Total Sheets
10	Mer	99	16.4/20.6	644	656

CERTIFIED ENGINEERING GEOLOGIST — DATE

OWENS CREEK BR @ HWY 99

LOG OF TEST BORINGS 2 OF 2

NOTE: A COPY OF THIS LOG OF TEST BORINGS IS AVAILABLE AT OFFICE OF STRUCTURE MAINTENANCE AND INVESTIGATIONS, SACRAMENTO, CALIFORNIA

CU: 10
EA: 363101

BRIDGE No. 39-0006R/L

Sheet 15 of 15

To accompany plans dated 6 20 05

REGISTERED GEOLOGIST — Claudio Avila — No. 2208 — Exp. 9-30-03 — CERTIFIED ENGINEERING GEOLOGIST — STATE OF CALIFORNIA

BENCH MARK

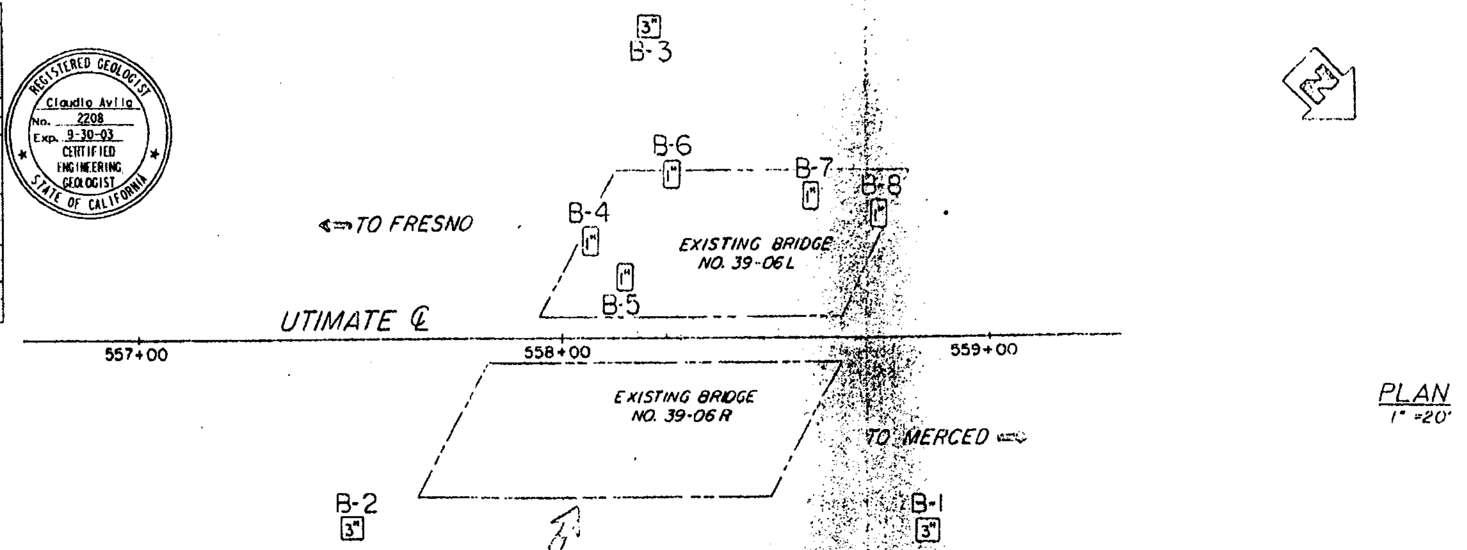
BM — Elev. 184.93
White paint mark and the number "28" on outside of westerly rail near the S. abutment of bridge 39-06L

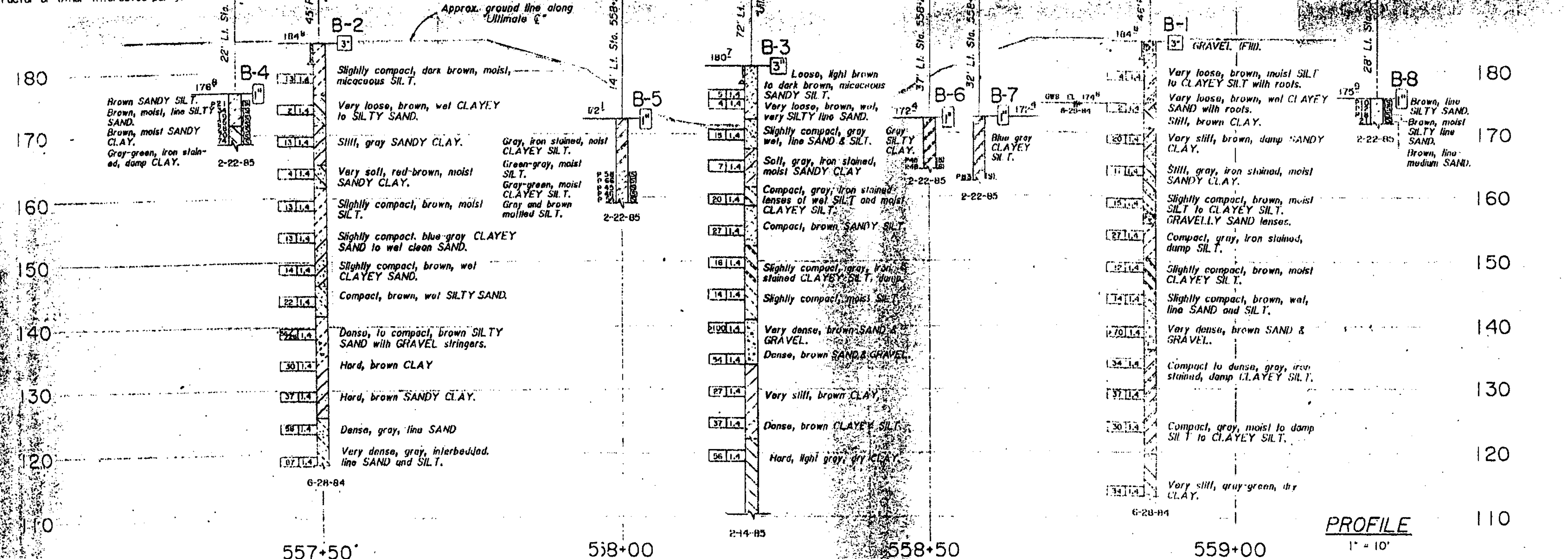
Revisions made to this Log of Test Borings from the original 1985 Log of Test Borings are the addition of the following table and notes:

Boring	Station	Offset from C/L Rte. 99
B-1	106+11	23.0 m Rt
B-2	105+68.5	23.0 m Rt
B-3	105+91	58.5 m Lt
B-4	105+86	43.5 m Lt
B-5	105+90	40.0 m Lt
B-6	105+93.5	47.0 m Lt
B-7	106+01	39.5 m Lt
B-8	106+07	45.0 m Lt

Notes:

1. See the General Plan and/or Foundation Plan for Metric Stationing.
2. Structure Design produced the data presented in the table above. The data are the metric locations for the As-Built Test Borings referenced to the proposed new structure location. This table is presented on the As-Built Log of Test Boring sheet for the convenience of any bidder, contractor or other interested party.





GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY	State of CALIFORNIA DEPARTMENT OF TRANSPORTATION	STRUCTURES - DESIGN	BRIDGE NO. 39-06R — POST MILE 10.6	OWENS CREEK BRIDGE (WIDEN) — LOG OF TEST BORINGS

DRAWN BY IRMA HOWELL
CHECKED BY

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU 10
WO 293501

SHEET 3 OF 5

6ir-zlo-b2.tif

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Mer	99	16.4/20.6	613	656

CERTIFIED ENGINEERING GEOLOGIST 6-4-03

6-20-05

PLANS APPROVAL DATE

Claudio Avila No. 2208 Exp. 9-30-03 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

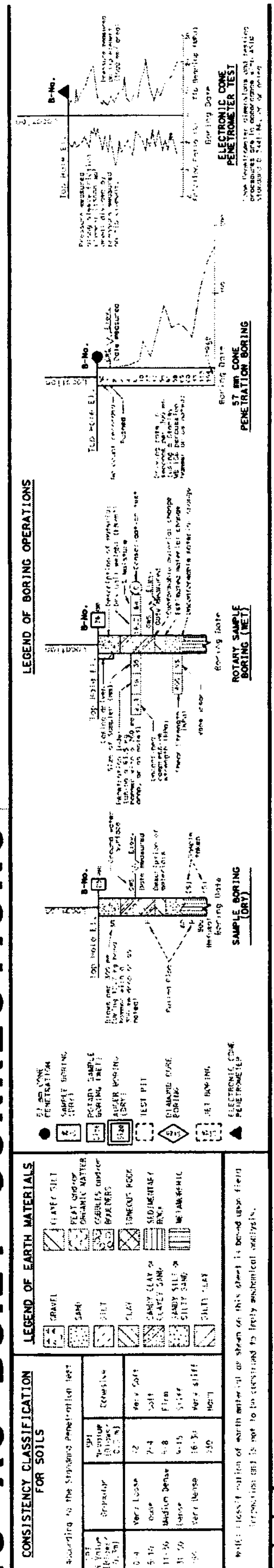
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

Caltrans Metric

AS BUILT CORRECTIONS

TRANSFER DATE: 4-8-200 FIELD CORRECTION DATE: 3-30-2006 CONTRACT NO: 10-3634

CORRECTIONS TRANSFERED BY: Sp FIELD CORRECTIONS BY: P.Abad



LEGEND OF BORING OPERATIONS

LEGEND OF EARTH MATERIALS

CONSISTENCY CLASSIFICATION FOR SOILS

BENCH MARK

BM 11611 Elev. 54.15 m

¾Inch rebar

94 mm

02-1

To Fresno

C/L Rte. 99

122+00 122+20 N30°13'11"W 122+40 122+60

To Merced

PLAN

1:250

20 m Lt. Sta. 122+38 C/L Rte. 99

02-1

94 mm

53.87

Elev.	Blows	Description
54 m		Lean CLAY (CL), very soft, very dark, grayish brown, dark to moist, rootlets.
	14 35	SILT (ML), medium dense, yellowish brown, dry to moist, weak to moderate cementation.
51 m		SILT (ML), medium dense, dark yellowish brown, moist, weaky cemented, some CLAY.
		SILTY SAND (SM), medium dense, dark grayish brown, wet.
48 m	21 35	Lean CLAY with SAND (CL), very stiff, light yellowish brown, moist, wet, weak cementation, some SILT, some GRAVEL, CALICHE.
	20 35	
	26 35	SANDY SILT (ML), medium dense, yellowish brown, moist to wet, some CLAY.
45 m		SILT with fine SAND (ML), medium dense, dark yellowish brown, moist to wet, weak cementation.
	29 35	SILT with fine SAND (ML), medium dense, dark yellowish brown, moist to wet.
42 m	21 35	Well graded medium to coarse SAND with SILT (SW-SM), medium dense, dark brown, wet, some fine GRAVEL.
	28 35	SILTY SAND (SM), medium dense, dark yellowish brown, moist to wet.
		Poorly graded medium SAND with CLAY (SP-SC), dense, yellowish brown, wet.
39 m	34 35	Poorly graded medium SAND with SILT (SP-SM), dense, brown, wet.
	13 35	Lean CLAY (CL), stiff, light yellowish brown, moist, weak cementation, blocky.
		Lean CLAY (CL), very stiff, light yellowish brown, moist, weak cementation, blocky. qu=430 kPa
36 m	21 35	qu=215 kPa qu=335 kPa
	16 35	Weak to moderate cementation. qu=382 kPa
33 m	11 35	Stiff. qu=239 kPa Lean CLAY (CL), very stiff, olive brown, moist, weak cementation, some SILT. qu=287 kPa
	19 35	Lean CLAY (CL), very stiff, olive brown, moist, weak cementation.
30 m	39 35	qu=382 kPa
	38 35	SANDY SILT (ML), dense, strong brown, wet, some CLAY.
		Poorly graded medium SAND with SILT, medium dense, brown, wet.
27 m	19 35	SILT with SAND (ML), medium dense, strong brown, wet, some CLAY.
	24 35	SILTY SAND (SM), medium dense, dark yellowish brown, wet, some CLAY.
24 m	41 35	Poorly graded medium SAND with SILT (SP-SM), dense, dark yellowish brown, wet.
	35 35	SILT with SAND (ML), dense, dark yellowish brown, wet, some CLAY.

10-30-02

122+30 122+50 122+70

PROFILE

HOR. 1:200
VER. 1:100

Notes:

1. Groundwater elevation was not measured, but was observed at elev. ranging from 50.36 m to 51.94 m at the nearby proposed Mission Ave. OC (39-0228).
2. Standard Penetration test were obtained using an Automatic Dietrich hammer.
3. qu=unconfined compressive strength using a pocket penetrometer.

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

ENGINEERING SERVICES	GEOTECHNICAL SERVICES	FIELD INVESTIGATION BY:	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES STRUCTURE DESIGN 6	BRIDGE NO. 39-0229L/R KILOMETER POST 18.36	MILES CREEK OVERFLOW NO. 2 LOG OF TEST BORINGS 1 OF 2
DRAWN BY W. Tang 05/03		J. Koump				
CHECKED BY C. Avila						

OOS GEOLOGIST LOG OF TEST BORINGS SHEET (METRIC) (REV. 3/02)

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

CU 10
EA 363111

DISREGARD PRINTS BEARING EARLIER REVISION DATES

15 16

10 | Mer | 5999 | 28.2/2.6/11.4 | 89 | 95

Gerald A. Reynolds #165

February 18, 1986

DIVISION OF ENGINEERING SERVICES - GEOTECHNICAL SERVICES

As-Built Log of Test Borings sheet is considered an informational document only. As such, the State of California registration seal with signature, license number and registration certificate expiration date confirm that this is a true and accurate copy of the original document. This drawing is available and presented only for the convenience of any bidder, contractor or other interested party.

DIST.	COUNTY	ROUTE	KILOMETER POST-TOTAL PROJECT	Sheet No.	Total Sheets
10	Mer	99	16.4/20.6	614	656

CERTIFIED ENGINEERING GEOLOGIST — DATE

Registered Geologist — Claudio Avila — No. 2708 — Exp. 9-30-03 — Certified Engineering Geologist — State of California

MILES CREEK OVERFLOW NO. 2

LOG OF TEST BORINGS 2 OF 2

NOTE: A COPY OF THIS LOG OF TEST BORINGS IS AVAILABLE AT OFFICE OF STRUCTURE MAINTENANCE AND INVESTIGATIONS, SACRAMENTO, CALIFORNIA

CU: 10 EA: 363101 — BRIDGE No. 39-0229L/R — Sheet 16 of 16

Revisions made to this Log of Test Borings from the original 1984 Log of Test Borings are the addition of the following table and notes:

Boring	Station	Offset from C/L Rte. 99
B-1	119+25	155 m Lt
B-2	119+70	138 m Lt

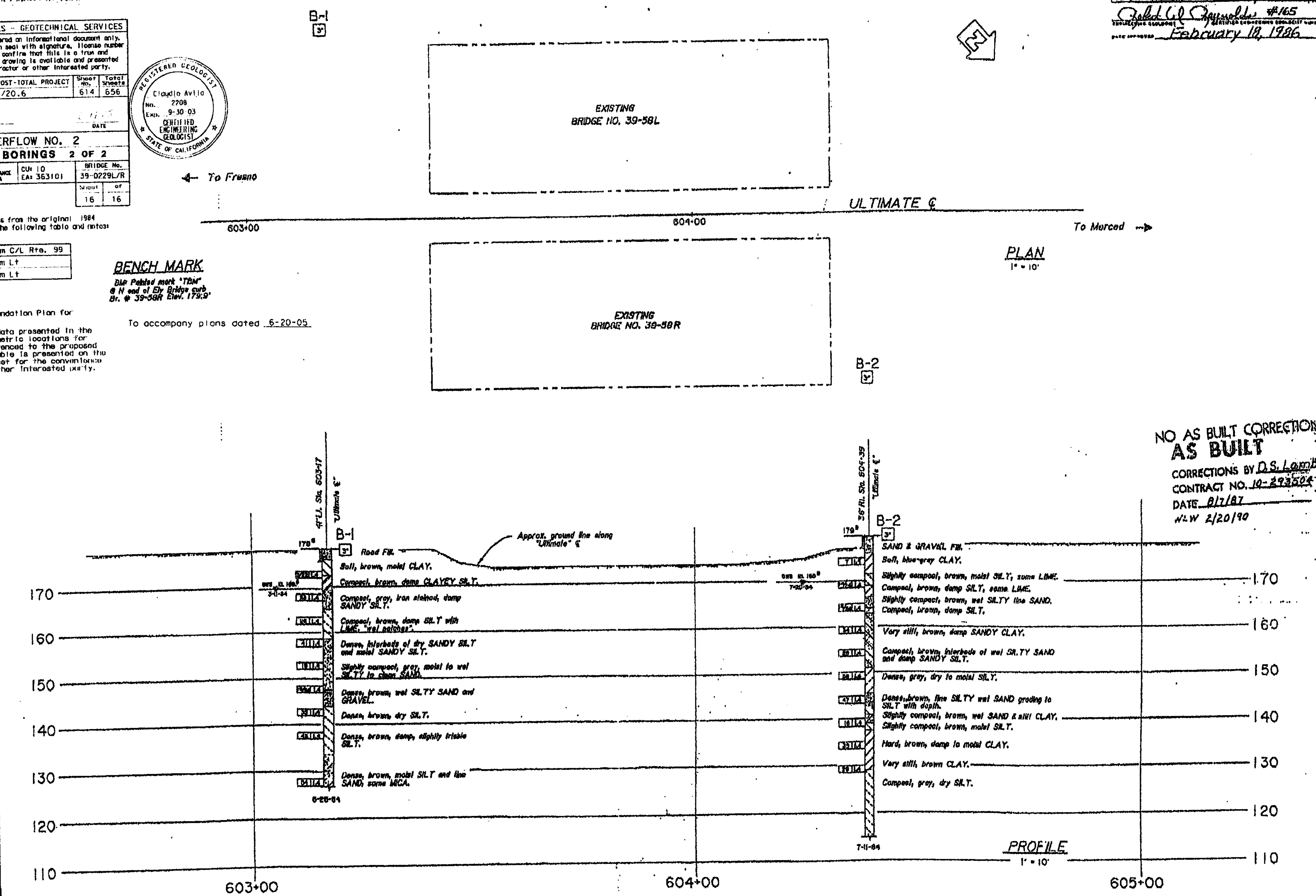
Notes:

1. See the General Plan and/or Foundation Plan for Metric Stationing.
2. Structure Design produced the data presented in the table above. The data are the metric locations for the As-Built Test Borings referenced to the proposed new structure location. This table is presented on the As-Built Log of Test Boring sheet for the convenience of any bidder, contractor or other interested party.

BENCH MARK

BM Painted mark "TBM" @ N end of Ely Bridge curb Br. # 39-58R Elev. 179.9'

To accompany plans dated 6-20-05



LEGEND OF EARTH MATERIALS

CONSISTENCY CLASSIFICATION FOR SOILS

UNIFIED SOIL CLASSIFICATION SYSTEM

NO AS BUILT CORRECTION

AS BUILT

CORRECTIONS BY D.S. Lamb

CONTRACT NO. 10-293504

DATE 8/7/87

WLW 2/20/90

GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY

DRAWN BY — NINA HOWELL — CHECKED BY

State of CALIFORNIA DEPARTMENT OF TRANSPORTATION

STRUCTURES - DESIGN 3

BRIDGE NO. 39-58 — POST MILE 11.4

MILES CREEK OVERFLOW (WIDEN)

LOG OF TEST BORINGS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU 10 WO 293501

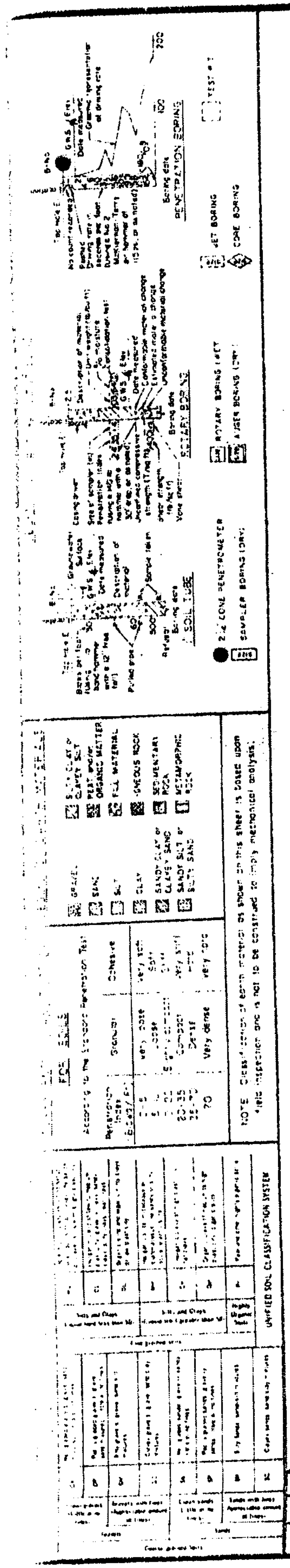
SHEET 7 OF 8

89

39-229lr-zlotb2.tif

AS BUILT PLANS Contract No. 10-293504 Date Completed 2-24-87 Document No.

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF TRANSPORTATION.



BENCH MARK

BM E-938-1958 FOUND USC & GS BRASS CAP STAMPED E-938-1958 ON NORTHERLY END OF EAST CURB BR. NO. 39 57R. ELEV. 180.69 FT.

To accompany plans dated 6-20-05

DIVISION OF ENGINEERING SERVICES - GEOTECHNICAL SERVICES					
As-Built Log of Test Borings sheet is considered an informational document only. As such, the State of California registration seal with signature, license number and registration certificate expiration date confirm that this is a true and accurate copy of the original document. This drawing is available and presented only for the convenience of any bidder, contractor or other interested party.					
DIST.	COUNTY	ROUTE	KILOMETER POST-TOTAL PROJECT	Sheet No.	Total Sheets
10	Mer	99	16.4/20.6	562	656

CERTIFIED ENGINEERING GEOLOGIST DATE

MILES CREEK OVERFLOW NO.1

LOG OF TEST BORINGS

NOTE: A COPY OF THIS LOG OF TEST BORINGS IS AVAILABLE AT OFFICE OF STRUCTURE MAINTENANCE AND INVESTIGATIONS, SACRAMENTO, CALIFORNIA

CU: 10 EA: 363101 — BRIDGE No. 39-0057L/R — Sheet 14 of 14

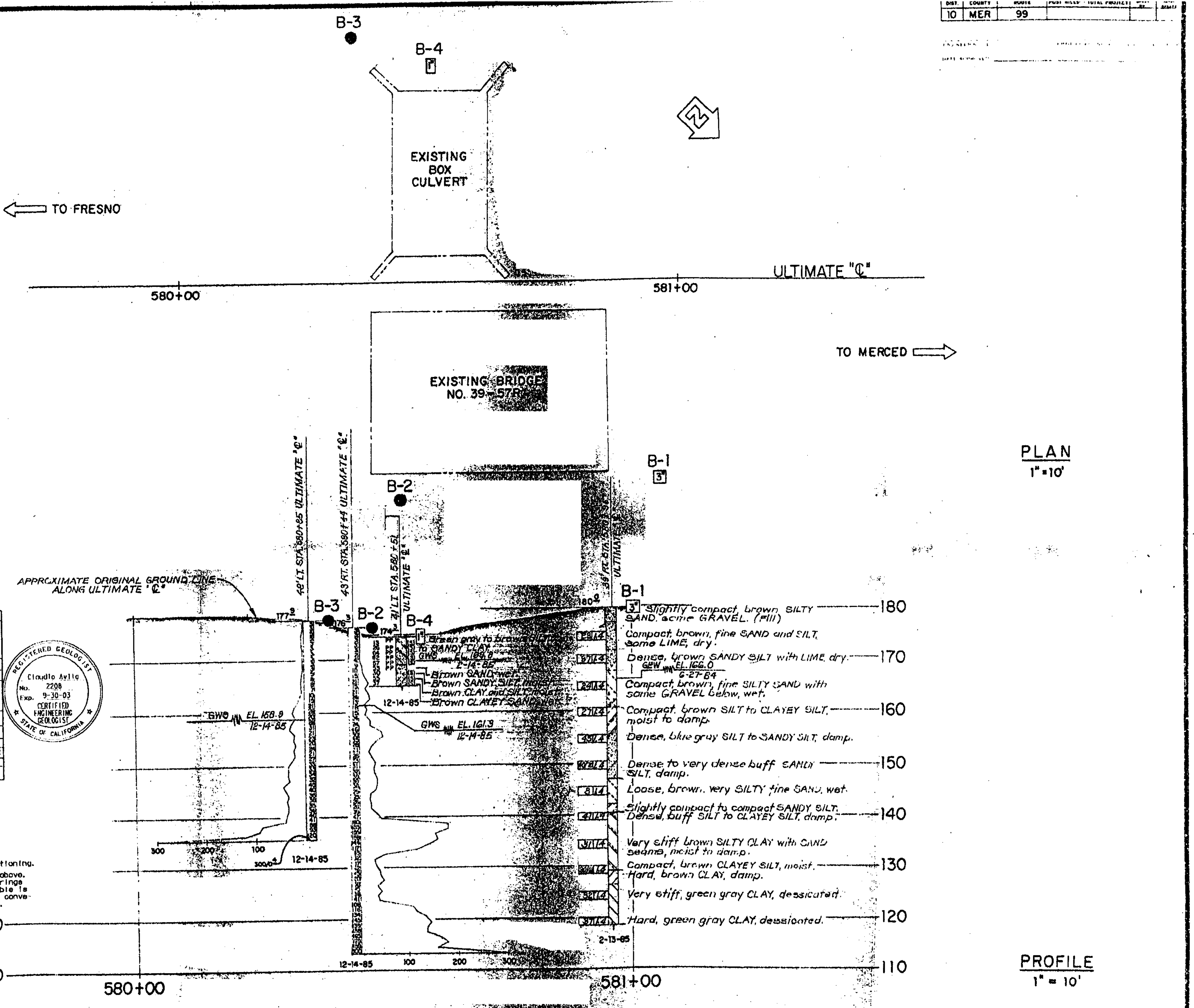
Revisions made to this Log of Test Borings from the original 1985 Log of Test Borings are the addition of the following table and notes:

Boring	Station	Offset from C/L Rte. 99
B-1	112+84	21.0 m Rt.
B-2	112+68	24.0 m Rt.
B-3	112+65	52.5 m Lt.
B-4	112+70	50.5 m Lt.

Notes:

1. See the General Plan and/or Foundation Plan for Metric Stationing.
2. Structure Design produced the data presented in the table above. The data are the metric locations for the As-Built Test Borings referenced to the proposed new structure location. This table is presented on the As-Built Log of Test Boring sheet for the convenience of any bidder, contractor or other interested party.

REGISTERED GEOLOGIST — Claudio Avila — No. 2208 — Exp. 9-30-03 — CERTIFIED ENGINEERING GEOLOGIST — STATE OF CALIFORNIA



GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY

DRAWN BY LEONY L. LOPEZ 5/85 — CHECKED BY

State of CALIFORNIA DEPARTMENT OF TRANSPORTATION — STRUCTURES DESIGN

BRIDGE NO. 39-57 — POST MILE

MILES CREEK OVERFLOW (WIDEN)

LOG OF TEST BORINGS

CU 10 — EA 293501

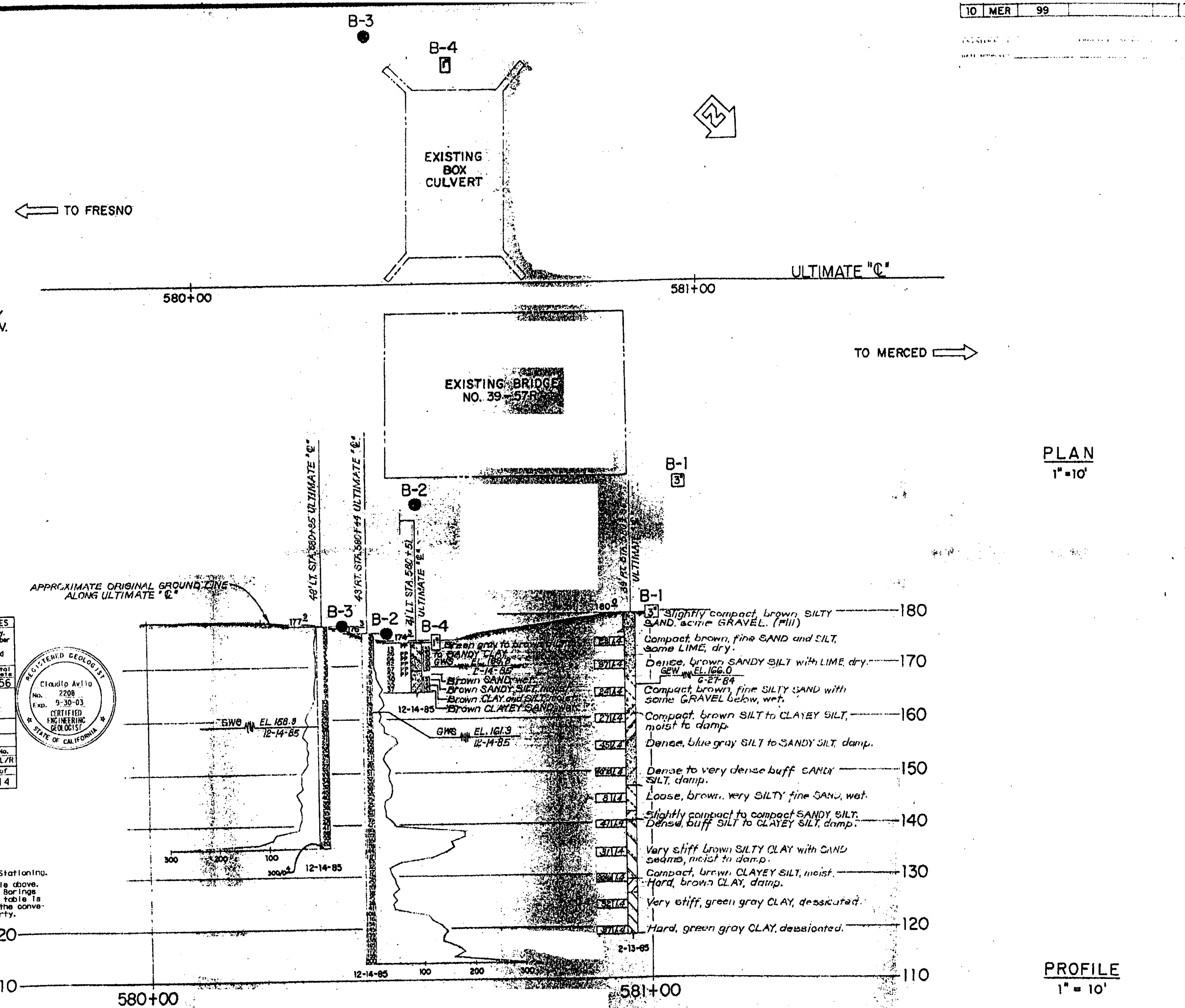
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

Disregard prints bearing earlier revision dates

DIST.	COUNTY	ROUTE
10	MER	99

BENCH MARK

BM E-938-1958 FOUND USC & GS BRASS CAP STAMPED E-938-1958 ON NORTHERLY END OF EAST CURB BR NO. 39 57R. ELEV. 180.69 FT



To accompany plans dated 6-20-05

DIVISION OF ENGINEERING SERVICES - GEOTECHNICAL SERVICES

As-Built Log of Test Borings sheet is considered an informational document only. As such, the State of California registration seal with signature, license number and registration certificate expiration date confirm that this is a true and accurate copy of the original document. This drawing is available and presented only for the convenience of any bidder, contractor or other interested party.

DIST.	COUNTY	ROUTE	KILOMETER POST-TOTAL PROJECT	Sheet No.	Total Sheets
10	Mer	99	16.4/20.6	562	656

CERTIFIED ENGINEERING GEOLOGIST — DATE

REGISTERED GEOLOGIST Claudio Avila No. 2208 Exp. 9-30-03 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

MILES CREEK OVERFLOW NO.1

LOG OF TEST BORINGS

NOTE: A COPY OF THIS LOG OF TEST BORINGS IS AVAILABLE AT OFFICE OF STRUCTURE MAINTENANCE AND INVESTIGATIONS, SACRAMENTO, CALIFORNIA

CU: 10
EA: 363101

BRIDGE No. 39-0057L/R
Sheet 14 of 14

Revisions made to this Log of Test Borings from the original 1985 Log of Test Borings are the addition of the following table and notes:

Boring	Station	Offset from C/L Rte. 99
B-1	112+84	21.0 m Rt.
B-2	112+68	24.0 m Rt.
B-3	112+65	52.5 m Lt.
B-4	112+70	50.5 m Lt.

Notes:

1. See the General Plan and/or Foundation Plan for Metric Stationing.
2. Structure Design produced the data presented in the table above. The data are the metric locations for the As-Built Test Borings referenced to the proposed new structure location. This table is presented on the As-Built Log of Test Boring sheet for the convenience of any bidder, contractor or other interested party.

GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY

DRAWN BY LEONY L. LOPEZ

CHECKED BY

State of CALIFORNIA DEPARTMENT OF TRANSPORTATION

STRUCTURES DESIGN

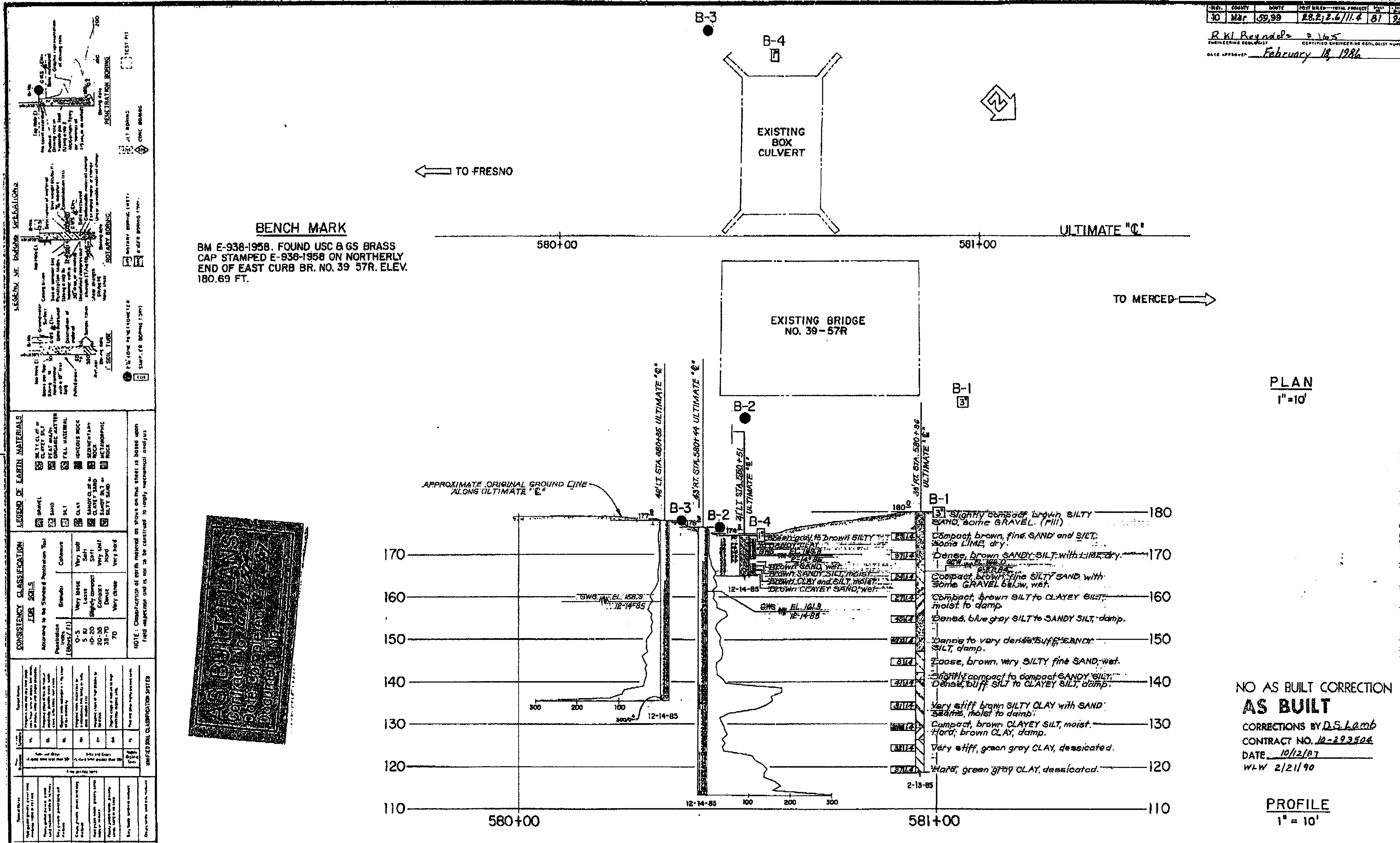
BRIDGE NO. 39-57

MILES CREEK OVERFLOW (WIDEN)

LOG OF TEST BORINGS

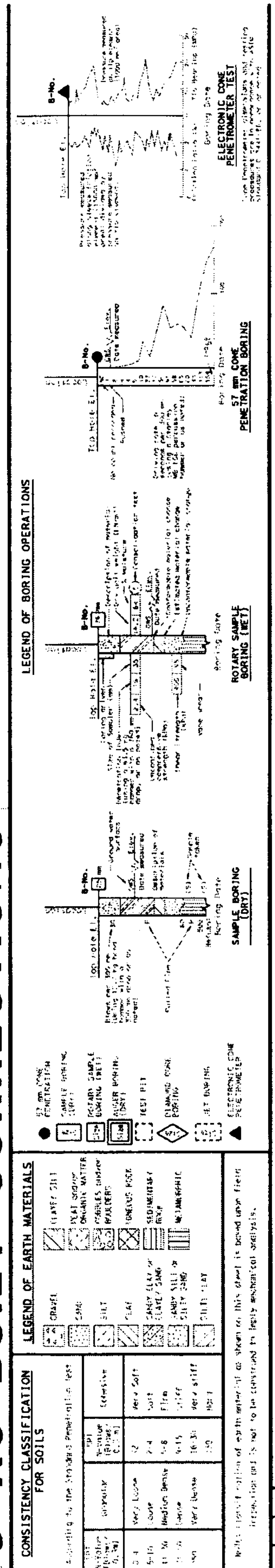
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU 10
EA 295501



GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY	State of CALIFORNIA DEPARTMENT OF TRANSPORTATION	STRUCTURES - DESIGN	BRIDGE NO. 39-57	MILES CREEK OVERFLOW (WIDEN)
DRAWN BY LEONT L. LOPEZ 3/85; 778; 22013		Jim Lealy 19815	POST MILE 11.0	LOG OF TEST BORINGS
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3		CU 10 WO 293501	Disregard prints bearing earlier revision dates	SHEET 7 OF 8

81



AS BUILT CORRECTIONS

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Mer	99	16.4/20.6	547	656

CERTIFIED ENGINEERING GEOLOGIST 6-4-03

6-20-05

PLANS APPROVAL DATE

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REGISTERED GEOLOGIST Claudio Avila No. 2208 Exp. 9-30-03 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

BENCH MARK

BM 1420 Elev. 55.07 m
FND Rod in Monument Well

⟸ To Fresno

C/L Rte. 99

110+00 +20 +40 +60 N44°29'28"W +80

To Merced ⟹

02-1
94 mm

PLAN
1:400

29.5 m Rt. Sta. 110+54 C/L Rte. 99

02-1
94 mm

53.92

Elev.	Blows	Description
53 m		Lean CLAY (CL), stiff, very dark grayish brown, moist, rootlets. qu ≥ 431 kPa, Su > 48 kPa
	15 35	SANDY lean CLAY (CL), stiff, grayish brown, moist. Qu =192 kPa
	11 35	Lean CLAY with SAND (CL), stiff, grayish brown, wet. Qu = 287 kPa
50 m		
	18 35	SILT with SAND (ML), medium dense, yellowish brown, moist, caliche. SANDY SILT (ML), medium dense, grayish brown, moist, coarse SAND to fine GRAVEL. SILTY SAND (SM), medium dense, strong brown, moist to wet, some fine GRAVEL layers, weak to moderate cementation.
47 m	20 35	SILT (ML), medium dense, light yellowish brown, moist, caliche, weak to moderate cementation. Lean CLAY with SAND (CL), firm, light yellowish brown, moist to wet. 25 mm thick layer of very soft CLAY at elev. 46.720m. Su= 38 kPa
	20 35	SANDY SILT (ML), medium dense, light yellowish brown, wet. Well graded fine to coarse SAND with SILT (SW-SM), dense, dark yellowish brown, wet.
44 m	47 35	SANDY SILT (ML), dense, yellowish brown, moist to wet, weak to moderate cementation.
	12 35	SANDY fat CLAY (CH), stiff, yellowish brown, moist to wet, weak to moderate cementation. Qu= 240 -287 kPa Qu= 192 -383 kPa
41 m	21 35	SILTY fine SAND (SM), medium dense, dark yellowish brown, moist to wet.
	14 35	Fat CLAY with SAND (CH), very stiff, light olive brown, moist to wet. Qu= 263 kPa Moderate cementation. qu = 287 - 431 kPa, Su = 62 kPa
38 m	21 35	CLAYEY SAND (SC), medium dense, light yellowish brown, moist to wet, moderate cementation. Qu = 192 kPa
	21 35	Lean CLAY (CL), very stiff, light yellowish brown, moist to wet, moderate cementation. Qu= 287 - 431 kPa, Su = 67 kPa
35 m	15 35	Qu= 311 kPa Qu= 287 kPa, Su = 43 kPa
	15 35	Qu= 353 kPa
32 m	6 35	Qu= 96 kPa
	27 35	Poorly graded fine to medium SAND with SILT, medium dense, grayish brown, moist to wet.
29 m	24 35	Well graded fine to coarse SAND (SW), medium dense, yellowish brown, wet, some fine GRAVEL.
	24 35	SANDY lean CLAY (CL), soft, grayish brown, wet. Poorly graded medium SAND with SILT (SP-SM), medium dense, dark grayish brown, wet.
26 m	39 35	SILT (ML), dense, grayish brown, moist to wet, some CLAY.
	40 35	Poorly graded fine to medium SAND with SILT (SP-SM), dense, dark grayish brown, wet.
23 m	45 35	SILTY SAND (SM), dense, grayish brown, wet.

10-24-02

110+50 110+60 110+70 110+80 110+90

Notes:

1. Groundwater elevation was not measured. However, groundwater was measured at an elev. 51.70 m at the nearby proposed Owen Creek Bridge (39-0006)
2. Standard Penetration test were obtained using an Automatic Dietrich hammer.
3. qu=unconfined compressive strength using a pocket penetrometer.
4. Su=undrained shear strength using a torvane.

PROFILE
HOR. 1:100
VER. 1:100

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

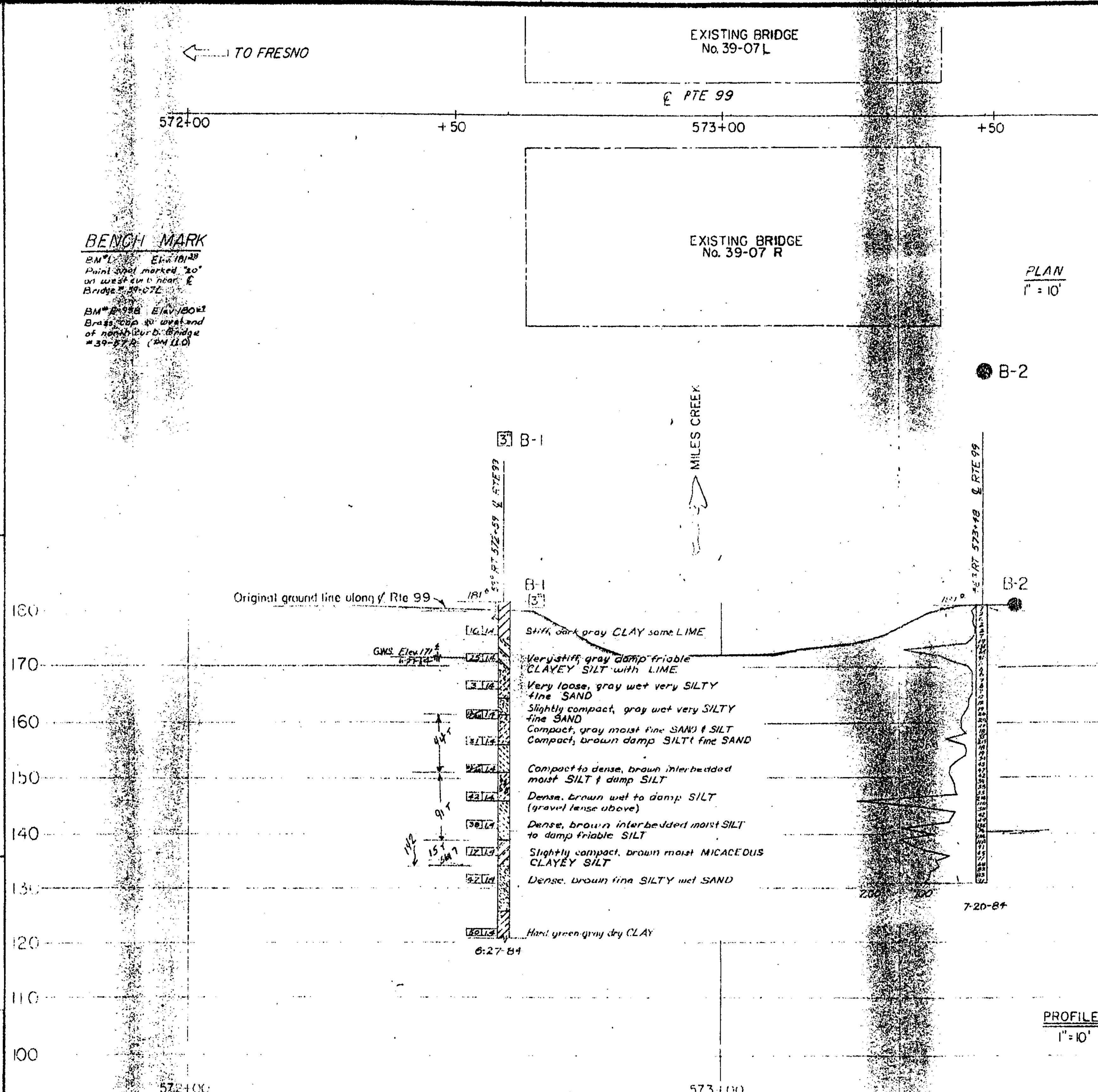
ENGINEERING SERVICES	GEOTECHNICAL SERVICES	FIELD INVESTIGATION BY:	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES STRUCTURE DESIGN 6	BRIDGE NO. 39-0007R/L	MILES CREEK BRIDGE
DRAWN BY F. Nguyen 5/03		J. Kaump		CU 10 EA 363111	KILOMETER POST 17.43	LOG OF TEST BORINGS 1 of 2
CHECKED BY C. Avila						

DOS GEOLOGIST LOG OF TEST BORINGS SHEET (METRIC) (REV. 3/02)

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

DISREGARD PRINTS BEARING EARLIER REVISION DATES

14 15



DIST.	COUNTY	ROUTE	POST MILES - TOTAL PROJECT
10	MER	99	

To accompany plans dated 6-20-05

DIVISION OF ENGINEERING SERVICES - GEOTECHNICAL SERVICES

As-Built Log of Test Borings sheet is considered an informational document only. As such, the State of California registration seal with signature, license number and registration certificate expiration date confirm that this is a true and accurate copy of the original document. This drawing is available and presented only for the convenience of any bidder, contractor or other interested party.

DIST.	COUNTY	ROUTE	KILOMETER POST-TOTAL PROJECT	Sheet No.	Total Sheets
10	Mer	99	16.4/20.6	548	656

CERTIFIED ENGINEERING GEOLOGIST — DATE

REGISTERED GEOLOGIST — Claudio Avila — No. 2208 — Exp. 9-30-05 — CERTIFIED ENGINEERING GEOLOGIST — STATE OF CALIFORNIA

MILES CREEK BRIDGE

LOG OF TEST BORINGS 2 OF 2

NOTE: A COPY OF THIS LOG OF TEST BORINGS IS AVAILABLE AT OFFICE OF STRUCTURE MAINTENANCE AND INVESTIGATIONS, SACRAMENTO, CALIFORNIA

CU: 10
EA: 363101

BRIDGE No. 39-0007R/L

Sheet 15 of 15

Revisions made to this Log of Test Borings from the original 1984 Log of Test Borings are the addition of the following table and notes:

Boring	Station	Offset from C/L Rte. 99
B-1	110+28	18.0 m Lt.
B-2	110+60	22.5 m Lt.

Notes:

1. See the General Plan and/or Foundation Plan for Metric Stationing.
2. Structure Design produced the data presented in the table above. The data are the metric locations for the As-Built Test Borings referenced to the proposed new structure location. This table is presented on the As-Built Log of Test Boring sheet for the convenience of any bidder, contractor or other interested party.

GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY

DRAWN BY J. DONALDSON

State of CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURES - DESIGN

BRIDGE NO. 39 07R/L
POST MILE 10.83

MILES CREEK BRIDGE (WIDEN)

LOG OF TEST BORINGS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU 10200
WO 293501

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Mer	99	16.4/20.6	547	656

Claudio Avila 6-4-03
CERTIFIED ENGINEERING GEOLOGIST

6-20-05
PLANS APPROVAL DATE

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REGISTERED GEOLOGIST Claudio Avila No. 2208 Exp. 9-30-03 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

Caltrans Metric

BENCH MARK

BM 1420 Elev. 55.07 m
FND Rod in Monument Well

⟸ To Fresno

C/L Rte. 99

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02-1
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PLAN
1:400

29.5 m Rt. Sta. 110+54
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02-1
94 mm

53.92

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PROFILE
HOR. 1:100
VER. 1:100

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AS BUILT CORRECTIONS

CONTRACT No. 10-363114
TRANSFER DATE: 4-5-2006
FIELD CORRECTION DATE: 6-4-2007
CORRECTIONS TRANSFERED BY: SP
FIELD CORRECTIONS BY: P.Moua

LEGEND OF BORING OPERATIONS
ELECTRONIC CONE PENETROMETER TEST
57 mm CONE PENETRATION BORING
ROTARY SAMPLE BORING (WET)
SAMPLE BORING (DRY)

LEGEND OF EARTH MATERIALS

CONSISTENCY CLASSIFICATION FOR SOILS

ENGINEERING SERVICES	GEOTECHNICAL SERVICES	FIELD INVESTIGATION BY:	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES STRUCTURE DESIGN 6	BRIDGE NO. 39-0007R/L	MILES CREEK BRIDGE
DRAWN BY F. Nguyen 5/03		J. Kaump			KILOMETER POST 17.43	LOG OF TEST BORINGS 1 of 2
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CU 10
EA 363111

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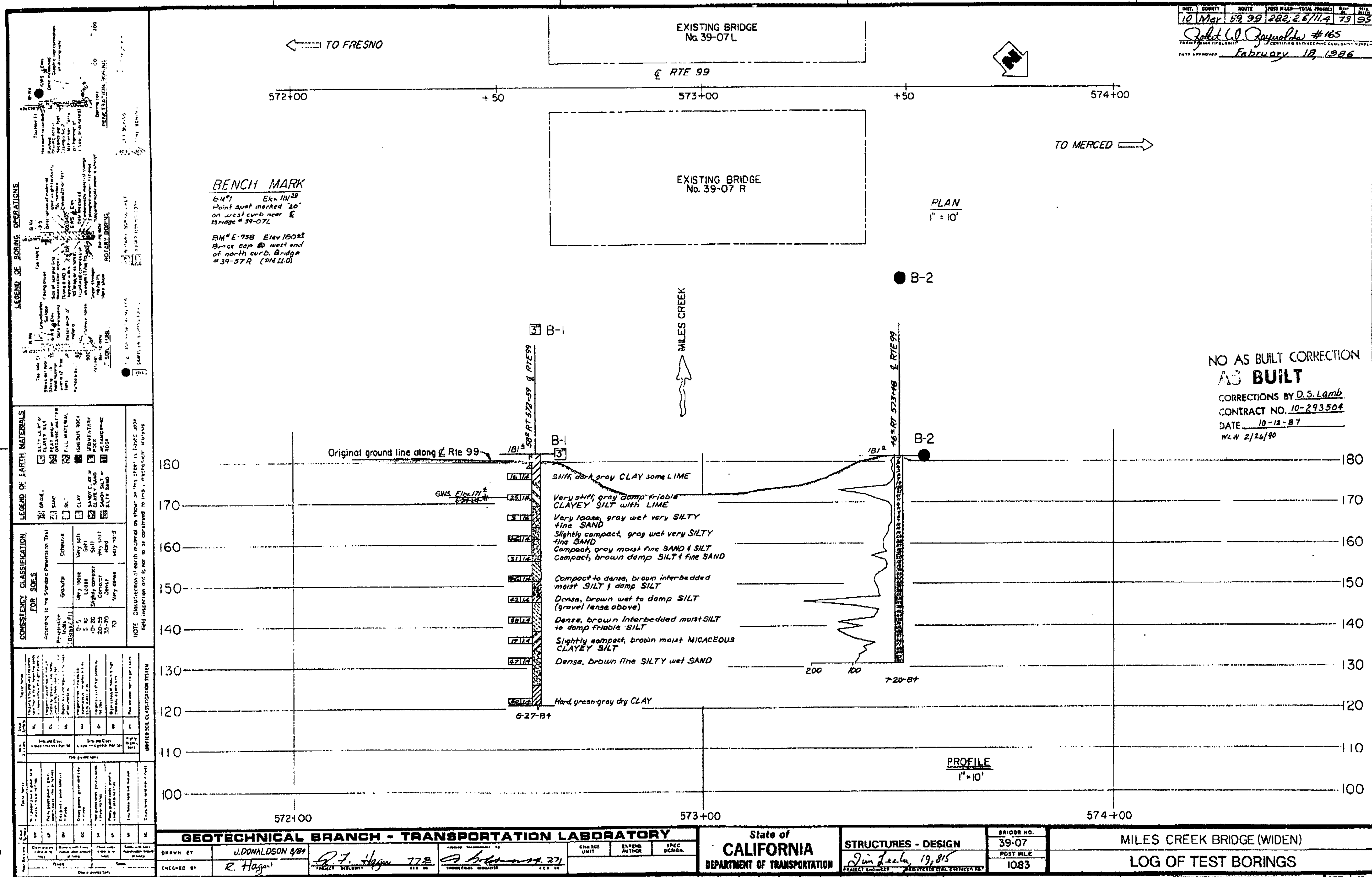
14 15

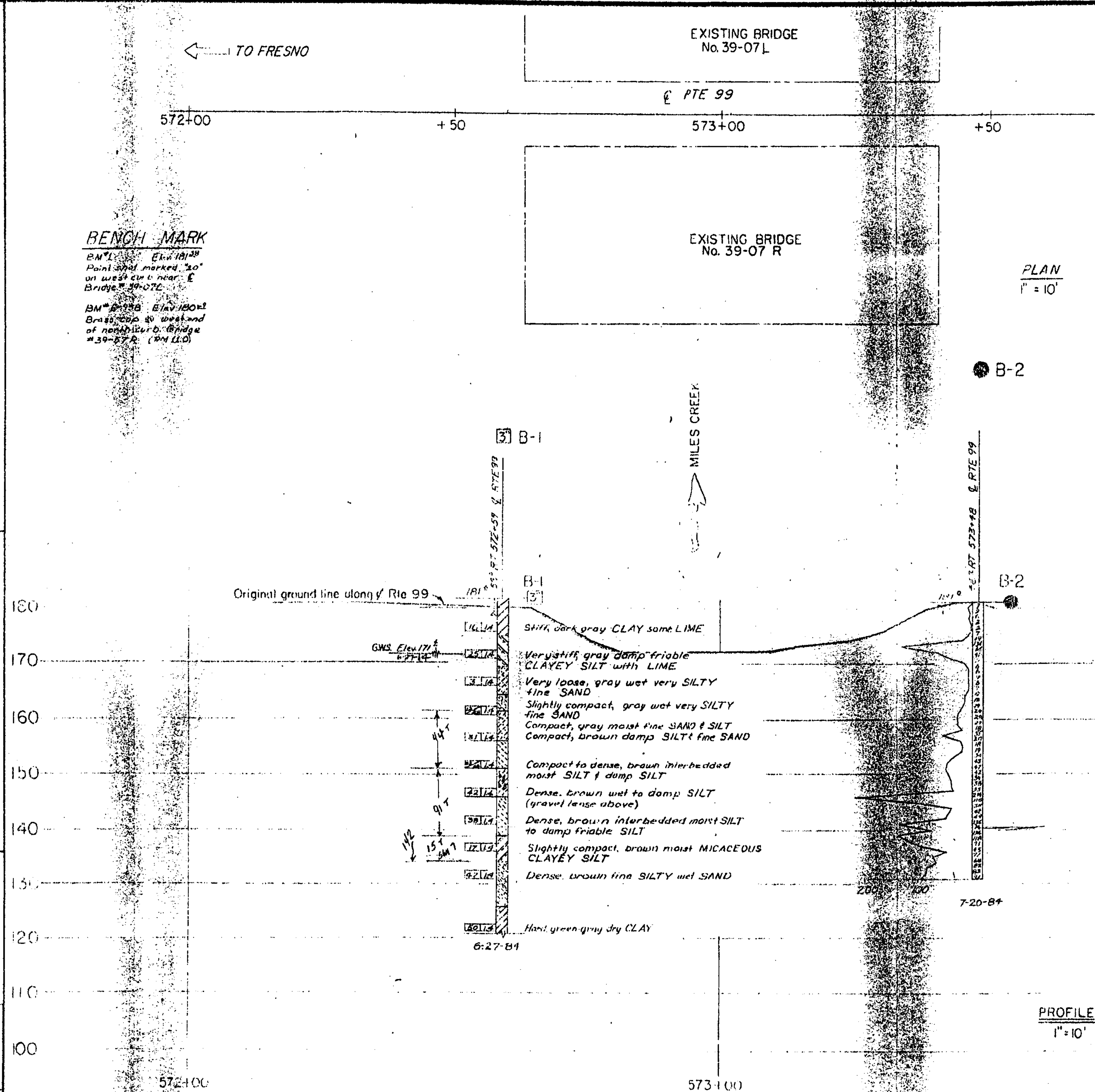


73

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF TRANSPORTATION.

7-12-90 Donald Blechford SUPERVISOR OF MICROFILM SERVICES

MICROFILM - STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - MICROFILM



DIST.	COUNTY	ROUTE
10	MER	99

To accompany plans dated 6-20-05

DIVISION OF ENGINEERING SERVICES - GEOTECHNICAL SERVICES

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CERTIFIED ENGINEERING GEOLOGIST DATE

REGISTERED GEOLOGIST Claudio Avila No. 2208 Exp. 9-30-03 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

MILES CREEK BRIDGE

LOG OF TEST BORINGS 2 OF 2

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CU: 10 EA: 363101

BRIDGE No. 39-0007R/L

Sheet 15 of 15

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GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY

DRAWN BY J. DONALDSON

State of CALIFORNIA DEPARTMENT OF TRANSPORTATION

STRUCTURES - DESIGN

BRIDGE NO. 39 07R/L

POST MILE 1083

MILES CREEK BRIDGE (WIDEN)

LOG OF TEST BORINGS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU 10200 WO 293501

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	MER	CAMPUS			

REGISTERED GEOTECHNICAL ENGINEER

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER GARY PARIKH No. G.E. 666 Exp. 12/31/09 GEOTECHNICAL STATE OF CALIFORNIA

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (JUNE 2007)

GROUP SYMBOLS AND NAMES

Graphic/Symbol	Group Names
GW	Well-graded GRAVEL Well-graded GRAVEL with SAND
GP	Poorly graded GRAVEL Poorly graded GRAVEL with SAND
GW-GM	Well-graded GRAVEL with SILT Well-graded GRAVEL with SILT and SAND
GW-GC	Well-graded GRAVEL with CLAY (or SILTY CLAY) Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)
GP-GM	Poorly graded GRAVEL with SILT Poorly graded GRAVEL with SILT and SAND
GP-GC	Poorly graded GRAVEL with CLAY (or SILTY CLAY) Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)
GM	SILTY GRAVEL SILTY GRAVEL with SAND
GC	CLAYEY GRAVEL CLAYEY GRAVEL with SAND
GC-GM	SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL with SAND
SW	Well-graded SAND Well-graded SAND with GRAVEL
SP	Poorly graded SAND Poorly graded SAND with GRAVEL
SW-SM	Well-graded SAND with SILT Well-graded SAND with SILT and GRAVEL
SW-SC	Well-graded SAND with CLAY (or SILTY CLAY) Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)
SP-SM	Poorly graded SAND with SILT Poorly graded SAND with SILT and GRAVEL
SP-SC	Poorly graded SAND with CLAY (or SILTY CLAY) Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)
SM	SILTY SAND SILTY SAND with GRAVEL
SC	CLAYEY SAND CLAYEY SAND with GRAVEL
SC-SM	SILTY, CLAYEY SAND SILTY, CLAYEY SAND with GRAVEL
PT	PEAT
	COBBLES COBBLES and BOULDERS BOULDERS

Graphic/Symbol	Group Names
CL	Lean CLAY Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
CL-ML	SILTY CLAY SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
ML	SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
OL	ORGANIC lean CLAY ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
OL	ORGANIC SILT ORGANIC SILT with SAND ORGANIC SILT with GRAVEL SANDY ORGANIC SILT SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT GRAVELLY ORGANIC SILT with SAND
CH	Fat CLAY Fat CLAY with SAND Fat CLAY with GRAVEL SANDY fat CLAY SANDY fat CLAY with GRAVEL GRAVELLY fat CLAY GRAVELLY fat CLAY with SAND
MH	Elastic SILT Elastic SILT with SAND Elastic SILT with GRAVEL SANDY elastic SILT SANDY elastic SILT with GRAVEL GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND
OH	ORGANIC fat CLAY ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
OH	ORGANIC elastic SILT ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY ORGANIC elastic SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
OL/OH	ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND

FIELD AND LABORATORY TESTING

C	Consolidation (ASTM D 2435)
CL	Collapse Potential (ASTM D 5333)
CP	Compaction Curve (CTM 216)
CR	Corrosivity Testing (CTM 643, CTM 422, CTM 417)
CU	Consolidated Undrained Triaxial (ASTM D 4767)
DS	Direct Shear (ASTM D 3080)
EI	Expansion Index (ASTM D 4829)
M	Moisture Content (ASTM D 2216)
OC	Organic Content-% (ASTM D 2974)
P	Permeability (CTM 220)
PA	Particle Size Analysis (ASTM D 422)
PI	Plasticity Index (AASHTO T 90) Liquid Limit (AASHTO T 89)
PL	Point Load Index (ASTM D 5731)
PM	Pressure Meter
PP	Pocket Penetrometer
R	R-Value (CTM 301)
SE	Sand Equivalent (CTM 217)
SG	Specific Gravity (AASHTO T 100)
SL	Shrinkage Limit (ASTM D 427)
SW	Swell Potential (ASTM D 4546)
TV	Pocket Torvane
UC	Unconfined Compression-Soil (ASTM D 2166) Unconfined Compression-Rock (ASTM D 2938)
UU	Unconsolidated Undrained Triaxial (ASTM D 2850)
UW	Unit Weight (ASTM D 4767)
VS	Vane Shear (AASHTO T 223)

APPARENT DENSITY OF COHESIONLESS SOILS

Description	SPT N_{60} (Blows / 12 inches)
Very loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

MOISTURE

Description	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

PERCENT OR PROPORTION OF SOILS

Description	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

PARTICLE SIZE

Description		Size
Boulder		> 12"
Cobble		3" to 12"
Gravel	Coarse	3/4" to 3"
	Fine	No. 4 to 3/4"
Sand	Coarse	No. 10 to No. 4
	Medium	No. 40 to No. 10
	Fine	No. 200 to No. 40

CEMENTATION

Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

CONSISTENCY OF COHESIVE SOILS

Description	Unconfined Compressive Strength (tsf)	Pocket Penetrometer Measurement (tsf)	Torvane Measurement (tsf)	Field Approximation
Very Soft	< 0.25	< 0.25	< 0.12	Easily penetrated several inches by fist
Soft	0.25 to 0.50	0.25 to 0.50	0.12 to 0.25	Easily penetrated several inches by thumb
Medium Stiff	0.50 to 1.0	0.50 to 1.0	0.25 to 0.50	Penetrated several inches by thumb with moderate effort
Stiff	1 to 2	1 to 2	0.50 to 1.0	Readily indented by thumb but penetrated only with great effort
Very Stiff	2 to 4	2 to 4	1.0 to 2.0	Readily indented by thumbnail
Hard	> 4.0	> 4.0	> 2.0	Indented by thumbnail with difficulty

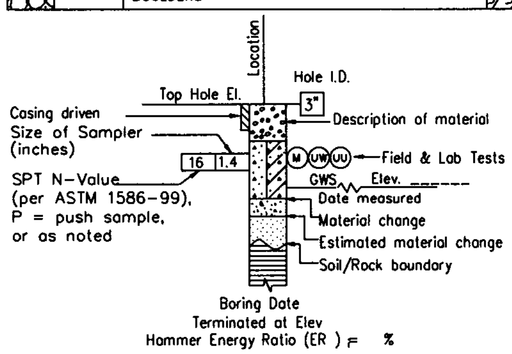
PLASTICITY OF FINE-GRAINED SOILS

Description	Criteria
Nonplastic	A 1/8-inch thread cannot be rolled at any water content.
Low	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.

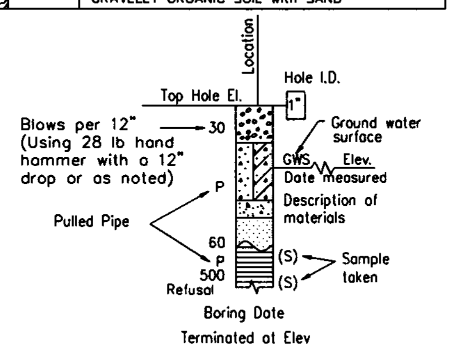
BOREHOLE IDENTIFICATION

Symbol	Hole Type	Description
	A	Auger Boring
	R P	Rotary drilled boring Rotary percussion boring (air)
	R	Rotary drilled diamond core
	HD HA	Hand driven (1-inch soil tube) Hand Auger
●	D	Dynamic Cone Penetration Boring
▲	CPT	Cone Penetration Test (ASTM D 5778-95)
□	O	Other

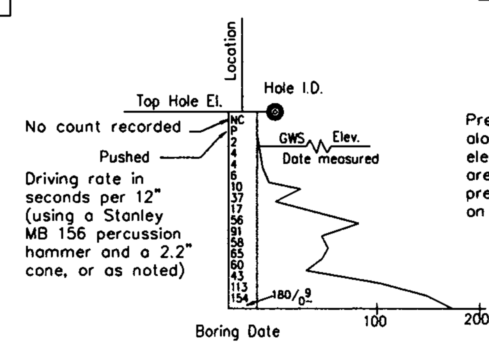
Note: Size in inches.



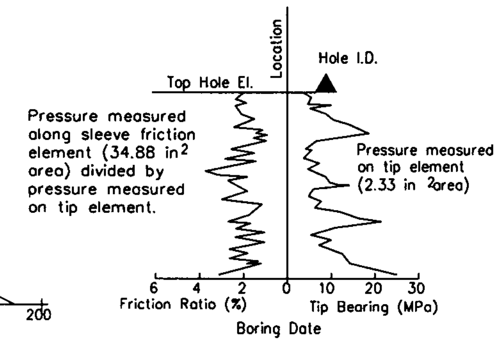
ROTARY BORING



HAND BORING



DYNAMIC CONE PENETRATION BORING



CONE PENETRATION TEST (CPT) SOUNDING

X DESIGN OVERSIGHT	DRAWN BY	L. TRAN	L. Bhangoo FIELD INVESTIGATION BY:
X SIGN OFF DATE	CHECKED BY	F. WANG	DATE: October 2007

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

F. WANG
PROJECT ENGINEER

BRIDGE NO. 39-0249L/R
POST MILE -

SOIL LEGEND
LOG OF TEST BORINGS

OSF GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 2/25/05)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU
EA

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY) SHEET OF

USERNAME => $USER

FILE => $REQUEST

CAMPUS PARKWAY OVERHEAD

P.M. 12.50

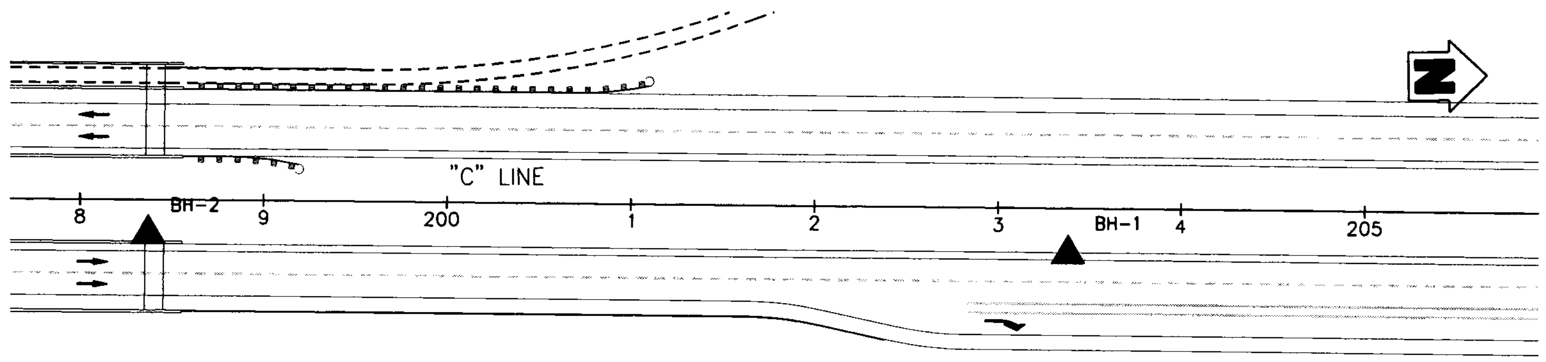
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	MER	CAMPUS			

REGISTERED GEOTECHNICAL ENGINEER

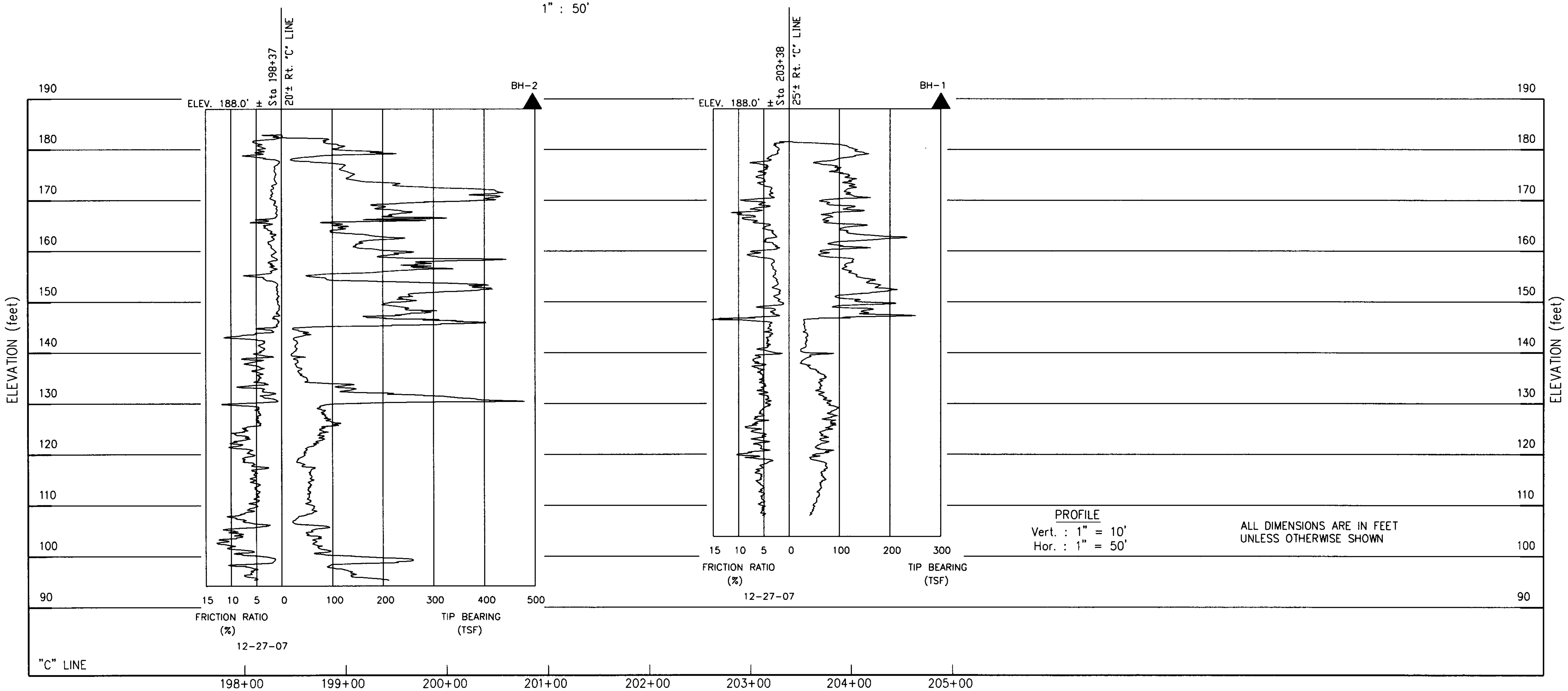
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

REGISTERED PROFESSIONAL ENGINEER
GARY PARIKH
No. G.E. 666
Exp. 12/31/09
GEOTECHNICAL
STATE OF CALIFORNIA



PLAN
1" : 50'



PROFILE
Vert. : 1" = 10'
Hor. : 1" = 50'

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN

ENGINEERING SERVICES		GEOTECHNICAL SERVICES
FUNCTIONAL SUPERVISOR	DRAWN BY: L. TRAN	FIELD INVESTIGATION BY:
NAME: G. PARIKH	CHECKED BY: F. WANG	L. BHANGOO

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH

BRIDGE NO. 39-0249L/R
POST MILES

CAMPUS PARKWAY OVERHEAD
LOG OF TEST BORINGS

DISREGARD PRINTS BEARING EARLIER REVISION DATES
REVISION DATES | SHEET | OF

P.M. 12.50

OGS CIVIL LOG OF TEST BORINGS SHEET

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CAMPUS PARKWAY OVERHEAD

CU
EA

FILE => $REQUEST

Jul 13, 2009 - 12:02pm S:\ACAD\207101.10\LOTB (Caltrans).dwg

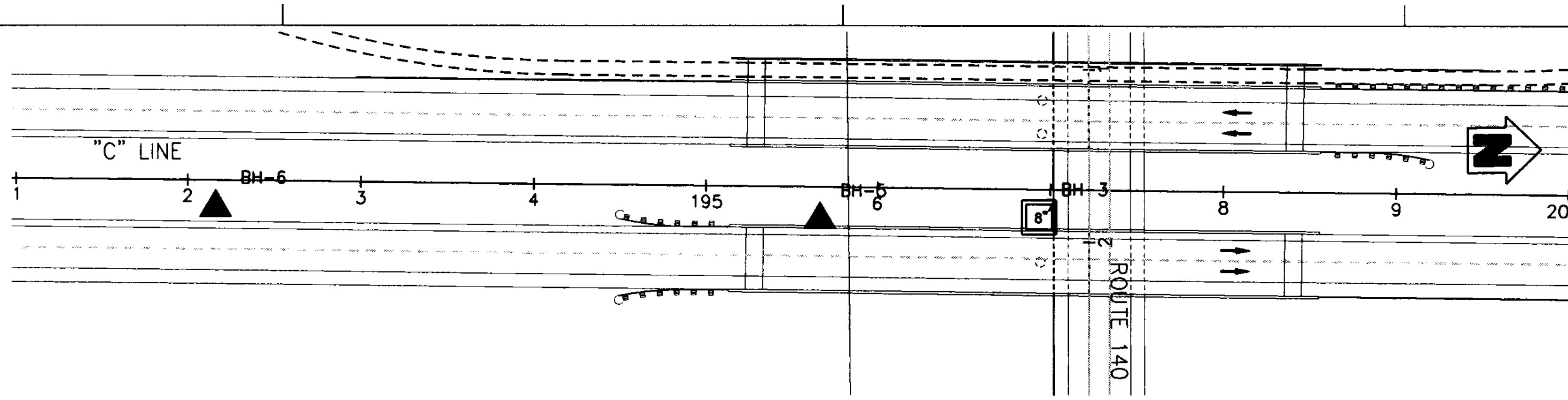
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	MER	CAMPUS			

REGISTERED GEOTECHNICAL ENGINEER

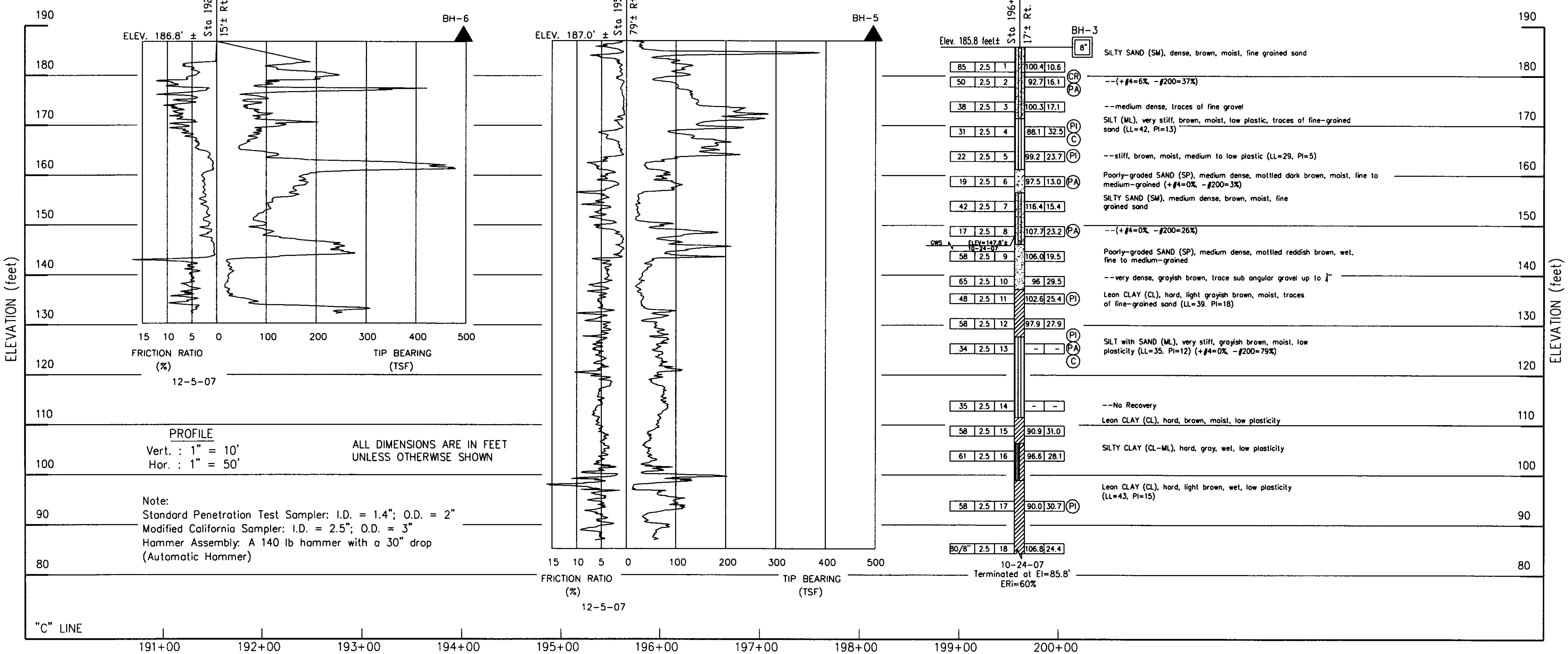
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

REGISTERED PROFESSIONAL ENGINEER
GARY PARIKH
No. G.E. 666
Exp. 12/31/09
GEOTECHNICAL
STATE OF CALIFORNIA



PLAN
1" : 50'



PROFILE
Vert. : 1" = 10'
Hor. : 1" = 50'

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN

Note:
Standard Penetration Test Sampler: I.D. = 1.4"; O.D. = 2"
Modified California Sampler: I.D. = 2.5"; O.D. = 3"
Hammer Assembly: A 140 lb hammer with a 30" drop
(Automatic Hammer)

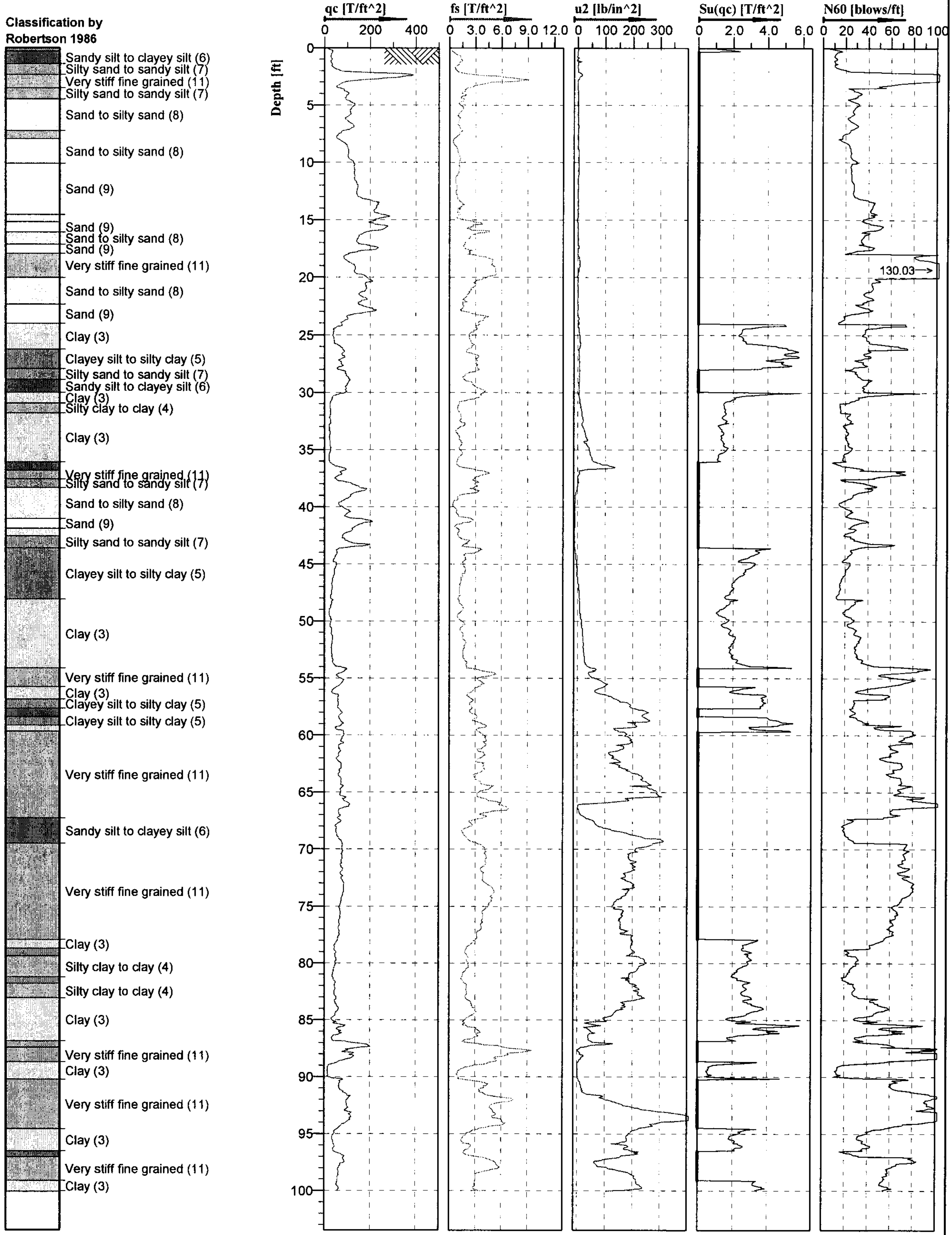
ENGINEERING SERVICES		GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN	BRIDGE NO. 39-0249L/R	CAMPUS PARKWAY OVERHEAD
FUNCTIONAL SUPERVISOR	DRAWN BY: L. TRAN	FIELD INVESTIGATION BY:		DESIGN BRANCH	POST MILES	LOG OF TEST BORINGS
NAME: G. PARIKH	CHECKED BY: F. WANG	L. BHANGOO				
OGS CIVIL LOG OF TEST BORINGS SHEET			ORIGINAL SCALE IN INCHES	CU EA	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES SHEET OF

CAMPUS PARKWAY OVERHEAD

FILE => $REQUEST

P.M. 12.50

Jul 13, 2009 - 12:01pm S:\ACAD\20710110\LOTB (Caltrans).dwg

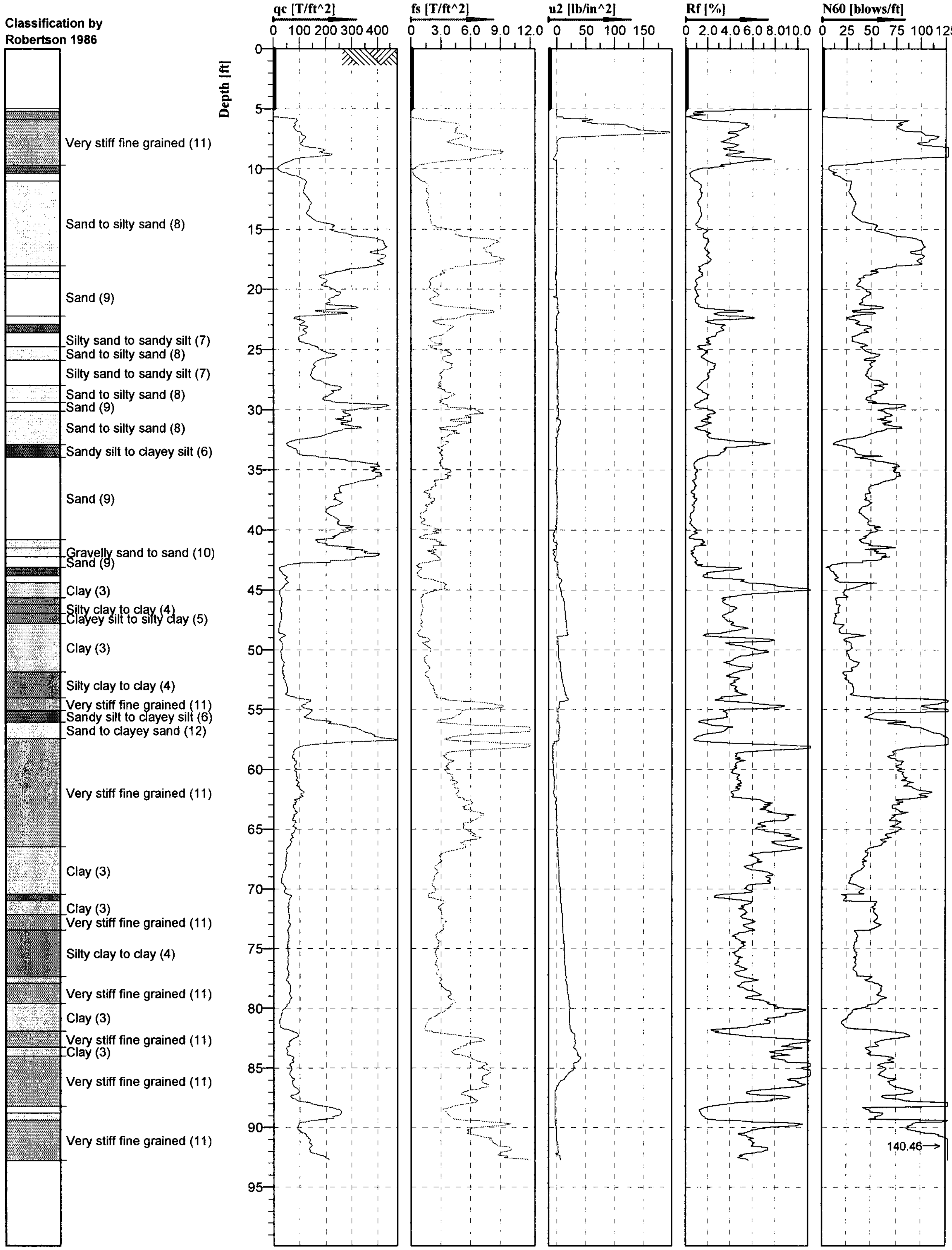


U2

Location: Merced, California	Position:	Ground level:	Test no: BH-5
Project ID: 207101.10	Client: Parikh Consultants	Date: 12/5/2007	Scale: 1 : 145
Project: Campus Parkway Merced		Page: 1/1	Fig:
		File: BH-5.cpd	

CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

Cone No: 0
Tip area [cm2]: 10
Sleeve area [cm2]: 150

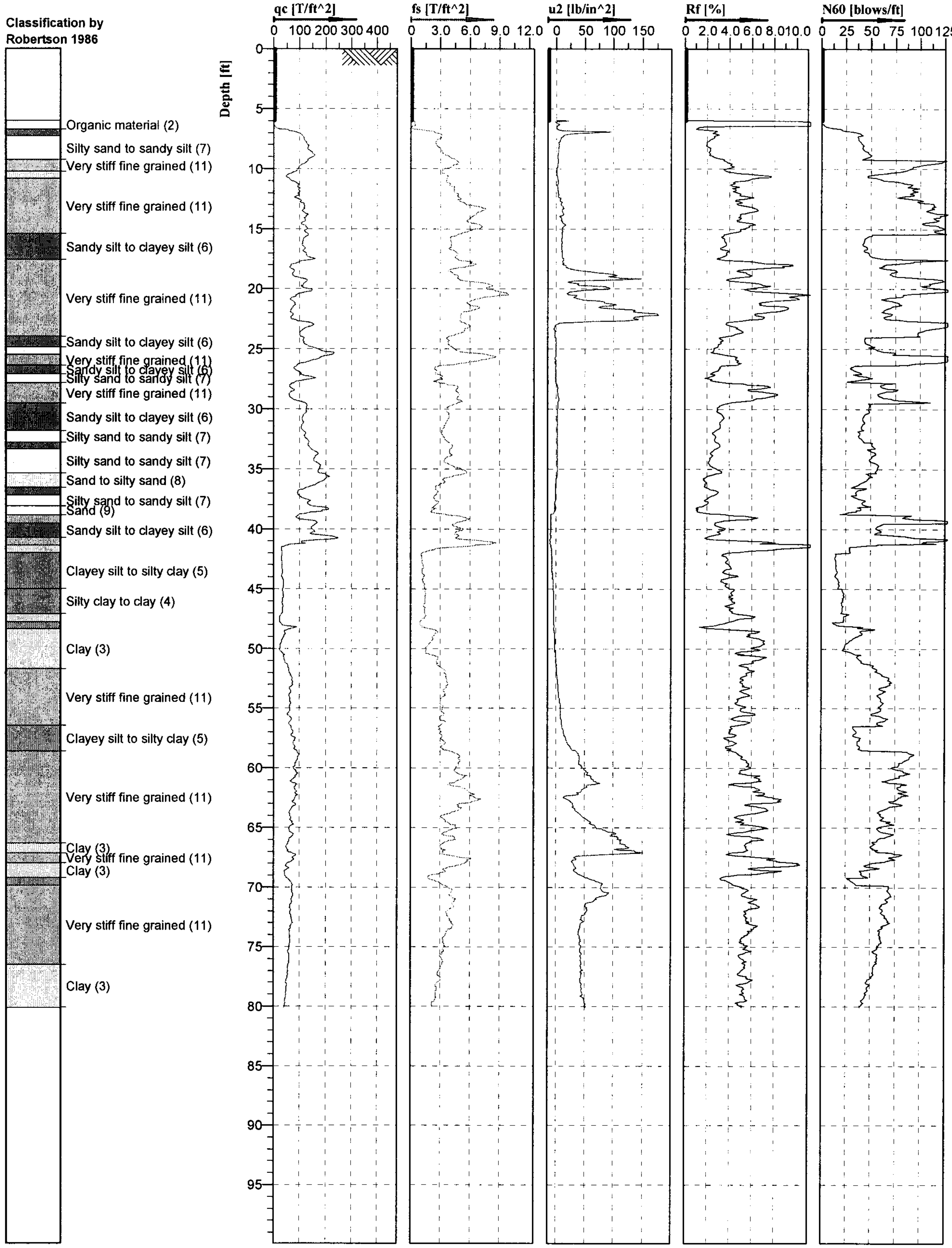


CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Location: Merced, California	Position:	Ground level:	Test no: BH-2
Project ID: 207101.10	Client: Parikh Consultants	Date: 12/27/2007	Scale: 1 : 140
Project: Campus Parkway Merced		Page: 1/1	Fig:
		File: BH-2.cpd	

CAMPUS PARKWAY OVERHEAD **P.M. 12.50**



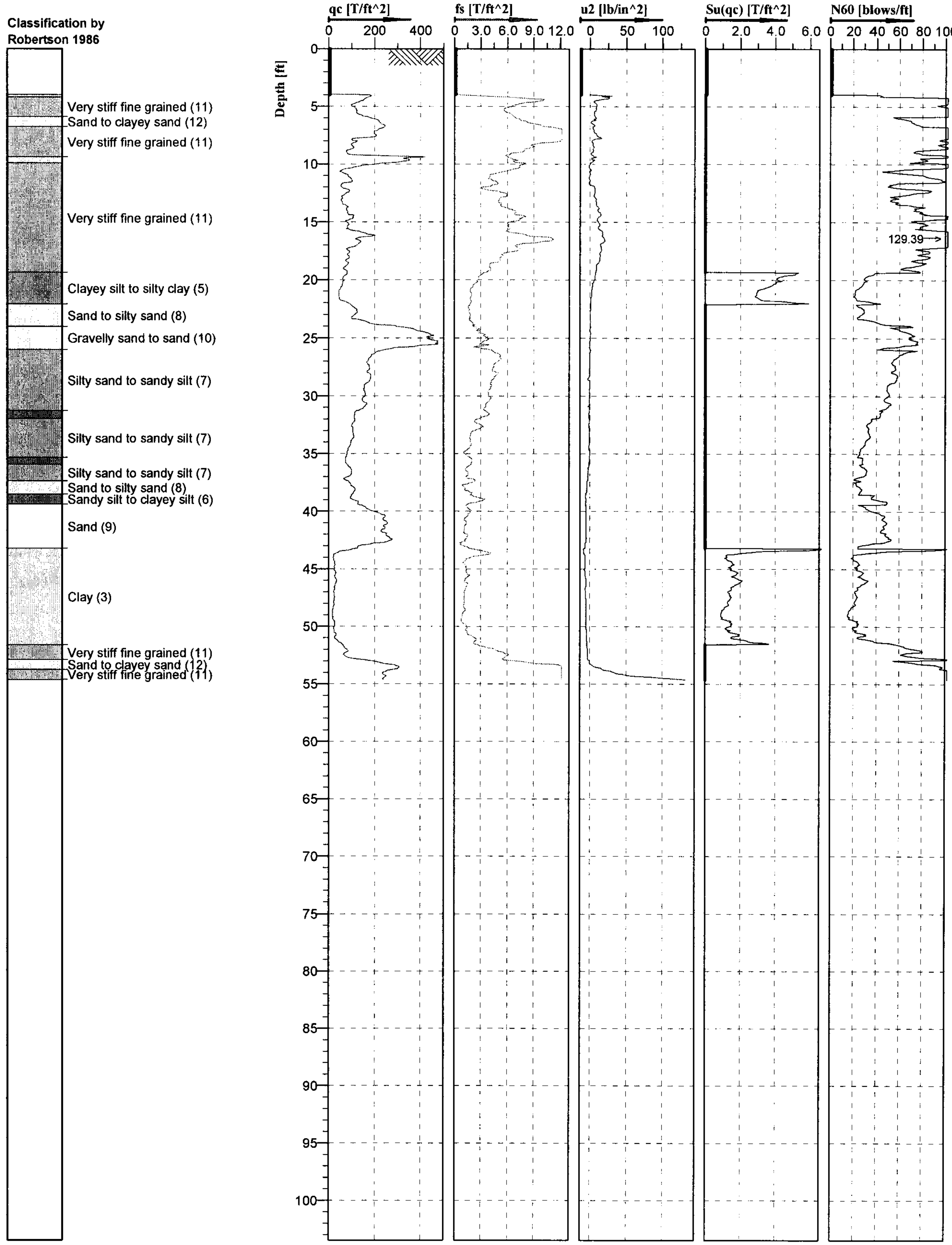
CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

U2

Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Location: Merced, California	Position:	Ground level:	Test no: BH-1
Project ID: 207101.10	Client: Parikh Consultants	Date: 12/27/2007	Scale: 1 : 140
Project: Campus Parkway Merced		Page: 1/1	Fig:
		File: BH-1.cpd	

CAMPUS PARKWAY OVERHEAD **P.M. 12.50**



CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

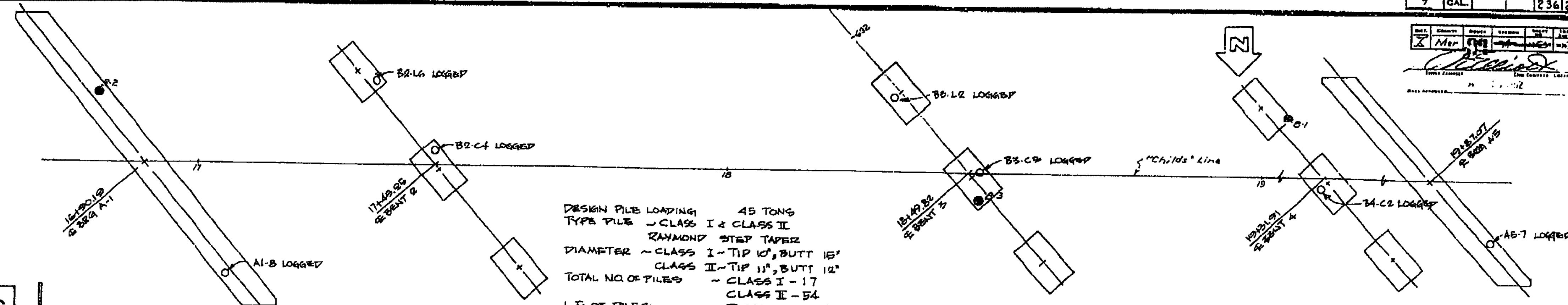
U2

Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Location: Merced, California	Position:	Ground level:	Test no: BH-6
Project ID: 207101.10	Client: Parikh Consultants	Date: 12/5/2007	Scale: 1 : 145
Project: Campus Parkway Merced		Page: 1/1	Fig:
		File: BH-6.cpd	

CAMPUS PARKWAY OVERHEAD **P.M. 12.50**

FED. ROAD DIST. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
7	CAL.			236	290



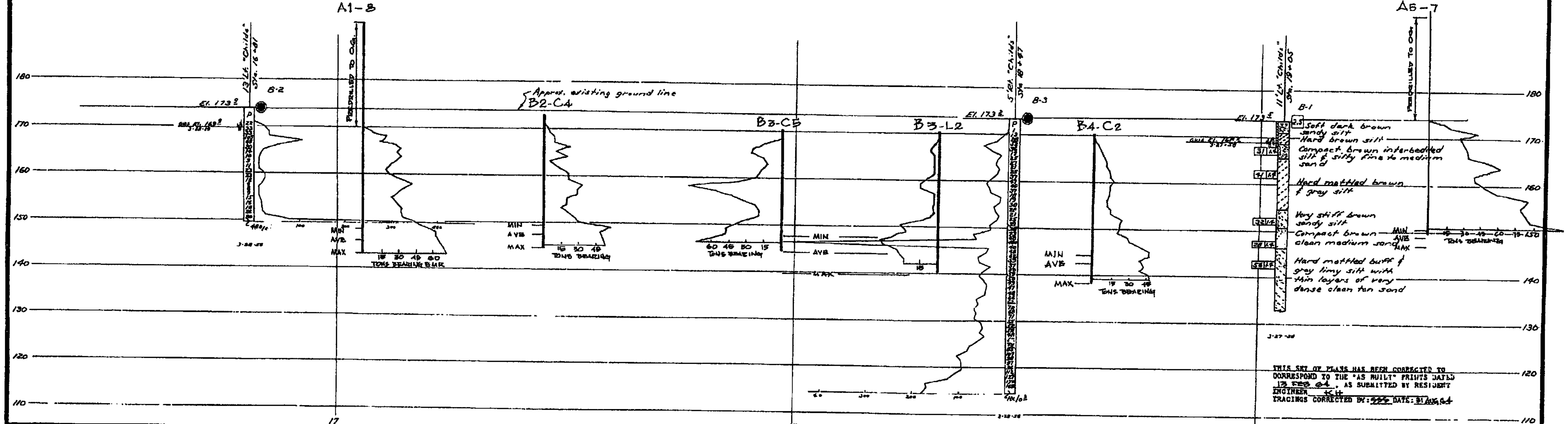
DESIGN PILE LOADING 45 TONS
TYPE PILE ~ CLASS I & CLASS II
RAYMOND STEP TAPER
DIAMETER ~ CLASS I ~ TIP 10", BUTT 15"
CLASS II ~ TIP 11", BUTT 12"
TOTAL NO. OF PILES ~ CLASS I - 17
CLASS II - 54

L.F. OF PILES	PLAN	AS BUILT
CLASS I	750 L.F.	782.48 L.F.
CLASS II	1,060 L.F.	1,354.01 L.F.

HAMMER — MODIFIED 65C

BM Mon # Brass Highway disc. at SW. Corner Highway 99 & Childs Ave. Elev. 175.55

BRIDGE DEPARTMENT



THIS SET OF PLANS HAS BEEN CORRECTED TO CORRESPOND TO THE "AS BUILT" PRINTS DATED 13 FEB 64, AS SUBMITTED BY RESIDENT ENGINEER KH
TRACINGS CORRECTED BY: SSS DATE: 31 AUG 64

CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

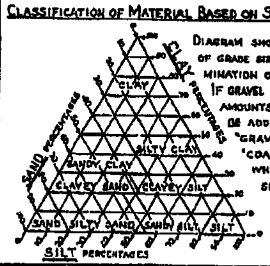


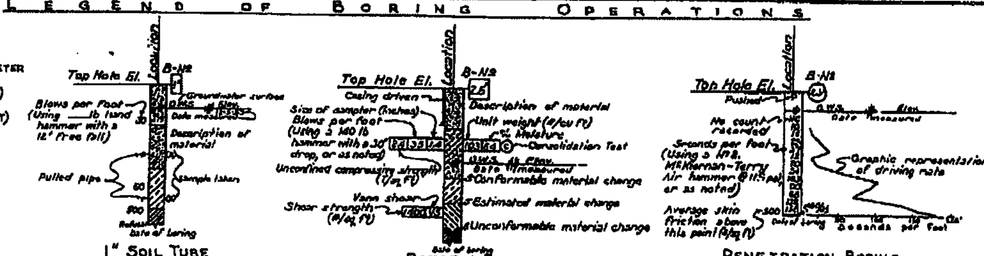
DIAGRAM SHOWING THE BASIS FOR ESTIMATES OF GRADE SIZE DISTRIBUTION USED IN DETERMINATION OF CLASS NAMES.
IF GRAVEL IS PRESENT IN APPRECIABLE AMOUNTS THE TERM "GRAVELLY" MAY BE ADDED TO THE CLASS NAME, VIZ. "GRAVELLY SAND". THE TERMS "COARSE", "MEDIUM" AND "FINE" WHEN USED TO DESCRIBE SAND, SILT AND GRAVEL REFER TO STANDARD GRADE SIZE LIMITS.

LEGEND OF EARTH MATERIALS

GRAVEL
SAND
SILT
CLAY
SANDY CLAY OR CLAYEY SAND
SANDY SILT OR SILTY SAND
SILTY CLAY OR CLAYEY SILT
PEAT AND/OR ORGANIC MATTER
FILL MATERIAL
IGNEOUS ROCK
SEDIMENTARY ROCK
METAMORPHIC ROCK

LEGEND OF BORING OPERATIONS

PLAN OF ANY BORING
PENETROMETER
2½" CONE PENETROMETER
SAMPLER BORING (DRY)
ROTARY BORING (WET)
AUGER BORING (DRY)
JET BORING
CORE BORING
TEST PIT



NOTES

[redacted]

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

CHILDS AVENUE OVERCROSSING

LOG OF TEST BORINGS

SCALE 1" = 10' | BRIDGE 39-143 | FILE | DRAWING F-6103-13

PR-6103-4

PREL. DRAWING NO. P-6103 15 63

236

972

Boring No. AP-BH1/MW1

SOIL BORING REPORT

Project	Anderson-Polzine	Project Number	
Location	1375 Brantley Street, Merced	Start Date/Time	06/14/2006-0815
		Finish Date/Time	06/14/2006-1245
Drilled By	Earthtec Ltd	Logged By	SGM
		Reviewed By	
Drilling Method	10" diameter continuous hollow stem	Weather/Temp(°F)	Clear / Hot
		Field Monitor	PID - Mini-Rae 2000 #4132
Bit Type	Auger	Surface Conditions	Dirt/Asphalt/Rock
Bit Size	10"		
Sampling	18x2" California modified split spoon	Ground Elevation	(Mean Sea Level) 169.0'

Water Level Information

Depth to Groundwater (ft)	33.0'		
Date - Time	06/14/2006		
Depth of Hole (ft)	50.5'		

Time	Sampled Depth Interval and Number	Depth (ft)	Laboratory Analysis	Soil Group Symbol (USCS)	Soil Description
0815					
0830	AP-BH1-5.5		NA	SM	FINE SILTY SAND (Artificial Fill): Dark green, moist, very strong petroleum hydrocarbon odor (350 ppmv) on PID. Lead (8.69 mg/kg).
0845	AP-BH1-10.5	10	See Side	SM	MEDIUM TO FINE SILTY SAND: Dark green to black, moist, micaceous, very strong petroleum hydrocarbon odor (9,000 ppmv on PID; analytical results: benzene (ND); toluene (3.7 mg/kg); ethylbenzene (10 mg/kg); xylene (59 mg/kg); TPH-g(880 mg/kg); lead (11 mg/kg); all others ND.
0900	AP-BH1-15.5		See Side	SM	MEDIUM TO FINE SILTY SAND: Dark green to black, moist, micaceous, very strong petroleum hydrocarbon odor (5,500 ppmv on PID; analytical results: benzene (0.29 mg/kg); toluene (8.9 mg/kg); ethylbenzene (30 mg/kg); xylene (46 mg/kg); TPH-g(1800 mg/kg); lead (3.89 mg/kg); all others ND. Blow count to cut sample: 8/9/11.
0925	AP-BH1-20.5	20	See Side	SM	MEDIUM TO FINE SILTY SAND: Dark green, moist, micaceous, very strong petroleum hydrocarbon odor (5,500 ppmv on PID; analytical results: benzene (0.097 mg/kg); toluene (2.9 mg/kg); ethylbenzene (12 mg/kg); xylene (45 mg/kg); TPH-g(700 mg/kg); all others ND. Lead (5.56 mg/kg); Blow count to cut sample: 8/10/13.
0945	AP-BH1-25.5		See Side	ML	CLAYEY SILT: Dark green to brown, moist, micaceous, moderate petroleum hydrocarbon odor (5,500 ppmv on PID; analytical results: benzene (0.052 mg/kg); toluene (0.52 mg/kg); ethylbenzene (0.17 mg/kg); xylene (0.90 mg/kg); TPH-g(4.3 mg/kg); lead (4.86 mg/kg); all others ND. Blow count to cut sample: 9/11/12.
0955	AP-BH1-30.5	30	See Side	ML	CLAYEY SILT: As above, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID; analytical results: benzene (ND); toluene (ND); ethylbenzene (0.0073 mg/kg); xylene (0.11 mg/kg); TPH-g(ND); lead (3.86 mg/kg); all others ND. Blow count to cut sample: 10/12/14.
1005	AP-BH1-33.0		▽ See Side	SM	Water table at 33.0 feet bgs
1050	AP-BH1-38.0		See Side	SM	MEDIUM TO COARSE GRAINED SAND: Light brown, wet, iron stained, micaceous, no petroleum odor (0 ppmv on PID). Analytical results all ND except toluene (0.0058 mg/kg) and xylene (0.075 mg/kgk); Lead (3.48 mg/kg) Blow count to cut sample: 8/9/12.
1115	AP-BH1-40.5	40	NA		MEDIUM TO COARSE GRAINED SAND: As above; no petroleum odor (0 ppmv on PID). Analytical results all ND except for xylene (0.014 mg/kg).mg/kgk); Lead (2.74 mg/kg); Blow count to cut sample: 8/9/12.
1130	AP-BH1-45.5		See Side	SM	MEDIUM TO COARSE GRAINED SAND: As above; no petroleum odor (0 ppmv on PID). Analytical results all ND except for xylene (0.0079 mg/kg).mg/kgk); Lead (4.43 mg/kg); Blow count to cut sample: 8/9/12.
1155	AP-BH1-50.5	50	NA		Total Depth: 50.5' bgs.
		60			

WELL COMPLETION NOTES: Solid 2" diameter schedule 40 PVC to 25 feet below ground surface; bentonite chip seal from 22.0 to 24.0 feet below ground surface; screen set from 25.0 to 45.0 feet below ground level with 0.010 screen; concrete slurry cement grout from 22.0 to 0.5 feet bgs; Monterey #212 filter sand pack; locking cap on top of case with traffic box set in ground. End cap is set at base of screened pipe.

Well Casing Elevation is 169.70 feet above mean sea level
Coordinates of well are 2355642.04 feet north, 6136032.58 feet east, California State Plane Coordinate System Zone 4, NAD83.
Coordinates: Latitude 37.28900347 degrees North, Longitude -120.4631322 degrees West
Longitude and Latitude Horizontal coordinates tied to USC&GS Benchmark A85 (PID HS1152), WGS 1984 Spheroid, NAD83 Projection

D:\Environmental\AP\AP-BH1\MW1.nl

GEO TRACKER ID: T0604713690
P.M. 13.20

SOIL BORING REPORT

Project	Anderson-Polzine	Project Number	
Location	1375 Brantley Street, Merced	Start Date/Time	06/14/2006-1530 Finish Date/Time 06/14/2006-0935
Drilled By	Earthtec Ltd	Logged By	SGM Reviewed By
Drilling Method	10" diameter continuous hollow stem	Weather/Temp(°F)	Clear / Hot
Bit Type	Auger Bit Size 10"	Field Monitor	PID - Mini-Rae 2000 #4132
Sampling	18x2" California modified split spoon	Surface Conditions	Dirt/Asphalt/Rock
		Ground Elevation	(Mean Sea Level) 169.0'

Water Level Information

Depth to Groundwater (ft)	33.0'		
Date - Time	06/14/2006		
Depth of Hole (ft)	45.5'		

Time	Sampled Depth Interval and Number	Depth (ft)	Laboratory Analysis	Soil Group Symbol (USCS)	Soil Description
0815					
1541	AP-BH2-5.5		NA	SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID; Soil sample not analyzed. Blow count to cut sample 7/10/11.
1600	AP-BH2-10.5	10	All ND	SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID; Soil sample analytical results: All ND. Lead (21.4 mg/kg) Blow count to cut sample 7/12/13.
1614	AP-BH2-15.5		All ND	SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID; Soil sample analytical results: All ND. Blow count to cut sample 6/10/12.
0745	AP-BH2-20.5	20	NA	SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID; Soil sample not analyzed. Blow count to cut sample 7/11/13.
0815	AP-BH2-25.5		See Side	ML	CLAYEY SILT: Light brown, moist, micaceous, slight petroleum odor (15 ppmv on PID); analytical results: toluene (0.0067 mg/kg); ethylbenzene (0.014 mg/kg); xylene (0.08 mg/kg); lead (4.86 mg/kg); all others ND. Blow count to cut sample: 9/11/12.
0840	AP-BH2-30.5	30	NA		
			∇		Water table at 33.0 feet bgs
0850	AP-BH2-35.0		All ND	SM	MEDIUM TO COARSE GRAINED SAND: Light brown, wet, iron stained, micaceous, no petroleum odor (0 ppmv on PID). Soil sample analytical results: All ND. Blow count to cut sample: 9/13/14.
0915	AP-BH2-40.5	40	All ND	SM	MEDIUM TO COARSE GRAINED SAND: Light brown, wet, iron stained, micaceous, no petroleum odor (0 ppmv on PID). Soil sample not analyzed. Blow count to cut sample: 10/11/15.
0935	AP-BH1-45.5		NA	SM	MEDIUM TO COARSE GRAINED SAND: Light brown, wet, iron stained, micaceous, no petroleum odor (0 ppmv on PID). Soil sample not analyzed. Blow count to cut sample: 11/12/14.
					Total Depth: 45.5' bgs.
		50			
		60			

WELL COMPLETION NOTES: Solid 2" diameter schedule 40 PVC to 25 feet below ground surface; bentonite chip seal from 22.0 to 24.0 feet below ground surface; screen set from 25.0 to 45.0 feet below ground level with 0.010 screen; concrete slurry cement grout from 22.0 to 0.5 feet bgs; Monterey #212 filter sand pack; locking cap on top of case with traffic box set in ground. End cap is set at base of screened pipe.

Well Casing Elevation is 169.78 feet above mean sea level
Coordinates of well are 2355677.61 feet north, 6136016.13 feet east, California State Plane Coordinate System Zone 4, NAD83.
Coordinates: Latitude 37.28910047 degrees North, Longitude -120.4631906 degrees West
Longitude and Latitude Horizontal coordinates tied to USC&GS Benchmark A85 (PID HS1152), WGS 1984 Spheroid, NAD83 Projection

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GEO TRACKER ID: T0604713690
P.M. 13.20

SOIL BORING REPORT

Project	Anderson-Polzine
Location	1375 Brantley Street, Merced
Drilled By	Earthtec Ltd
Drilling Method	10" diameter continuous hollow stem
Bit Type	Auger
Bit Size	10"
Sampling	18x2" California modified split spoon
Project Number	
Start Date/Time	06/27/2006-0730
Finish Date/Time	06/27/2006-1130
Logged By	SGM
Reviewed By	
Weather/Temp(°F)	Clear / Hot
Field Monitor	PID - Mini-Rae 2000 #4132
Surface Conditions	Dirt/Asphalt/Rock
Ground Elevation	(Mean Sea Level) 169.0'

Water Level Information

Depth to Groundwater (ft)	33.0'		
Date - Time	06/27/2006		
Depth of Hole (ft)	45.5'		

Time	Sampled Depth Interval and Number	Depth (ft)	Laboratory Analysis	Soil Group Symbol (USCS)	Soil Description
0730					
0745	AP-BH3-5.5		See Side	SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, moderate petroleum hydrocarbon odor (250 ppmv on PID; Soil sample analytical results: toluene (0.61 mg/kg); ethylbenzene (14 mg/kg); xylene (79 mg/kg); TPH-g (2400 mg/kg); TPH-d(790 mg/kg); TPH-mo (46 mg/kg); Blow count to cut sample 6/8/10.
0810	AP-BH3-10.5	10	See Side	SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, moderate petroleum hydrocarbon odor (50 ppmv on PID; Soil sample analytical results: toluene (0.017 mg/kg); ethylbenzene (0.37 mg/kg); xylene (1.2 mg/kg); TPH-g (17 mg/kg); TPH-d(140 mg/kg); TPH-mo (340 mg/kg); Blow count to cut sample 7/9/11.
0854	AP-BH3-15.5		See Side	SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (5 ppmv on PID; Soil sample analytical results: xylene (0.0058 mg/kg); TPH-d (3.5 mg/kg); All others ND. Blow count to cut sample 9/10/12.
0910	AP-BH3-20.5	20	See Side	SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID; Soil sample analytical results: xylene (0.023 mg/kg); TPH-d (4.6 mg/kg); All others ND. Blow count to cut sample 10/11/14.
0921	AP-BH3-25.5		NA	ML	CLAYEY SILT: Light brown, moist, micaceous, no petroleum odor (0 ppmv on PID); Soil sample not analyzed. Blow count to cut sample: 9/10/13.
0932	AP-BH3-30.5	30	See Side	ML	CLAYEY SILT: Light brown, moist, micaceous, no petroleum odor (0 ppmv on PID); Soil sample analytical results: All ND. Blow count to cut sample: 11/12/15.
			∇		Water table at 33.0 feet bgs
1000	AP-BH3-35.0		See Side	SM	MEDIUM TO COARSE GRAINED SAND: Light brown, wet, iron stained, micaceous, no petroleum odor (0 ppmv on PID). Soil sample analytical results: All ND except TPH-d (1.2 mg/kg). Blow count to cut sample: 9/12/13.
1015	AP-BH3-40.5	40	NA	SM	MEDIUM TO COARSE GRAINED SAND: Light brown, wet, iron stained, micaceous, no petroleum odor (0 ppmv on PID). Soil sample not analyzed. Blow count to cut sample: 10/12/15.
1033	AP-BH3-45.5		See Side	SM	MEDIUM TO COARSE GRAINED SAND: Light brown, wet, iron stained, micaceous, no petroleum odor (0 ppmv on PID). Soil sample analytical results all ND except TPH-d (6.4 mg/kgk) and TPH-mo (15 mg/kg). Blow count to cut sample: 11/12/14.
					Total Depth: 45.5' bgs.
		50			
		60			

WELL COMPLETION NOTES: Solid 2" diameter schedule 40 PVC to 25 feet below ground surface; bentonite chip seal from 22.0 to 24.0 feet below ground surface; screen set from 25.0 to 45.0 feet below ground level with 0.010 screen; concrete slurry cement grout from 22.0 to 0.5 feet bgs; Monterey #212 filter sand pack; locking cap on top of case with traffic box set in ground. End cap is set at base of screened pipe.

Well Casing Elevation is 169.65 feet above mean sea level
Coordinates of well are 2355663.17 feet north, 6136046.80 feet east, California State Plane Coordinate System Zone 4, NAD83.
Coordinates: Latitude 37.28906208 degrees North, Longitude -120.4630844 degrees West
Longitude and Latitude Horizontal coordinates tied to USC&GS Benchmark A85 (PID HS1152), WGS 1984 Spheroid, NAD83 Projection

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GEO TRACKER ID: T0604713690
P.M. 13.20

SOIL BORING REPORT

Project	Anderson-Polzine	Project Number	
Location	1375 Brantley Street, Merced	Start Date/Time	06/27/2006-0730
Drilled By	Earthtec Ltd	Finish Date/Time	06/27/2006-1130
Drilling Method	10" diameter continuous hollow stem	Logged By	SGM
Bit Type	Auger	Reviewed By	
Bit Size	10"	Weather/Temp(°F)	Clear / Hot
Sampling	18x2" California modified split spoon	Field Monitor	PID - Mini-Rae 2000 #4132
		Surface Conditions	Dirt/Asphalt/Rock
		Ground Elevation	(Mean Sea Level) 169.0'

Water Level Information

Depth to Groundwater (ft)	33.0'		
Date - Time	06/27/2006		
Depth of Hole (ft)	45.5'		

Time	Sampled Depth Interval and Number	Depth (ft)	Laboratory Analysis	Soil Group Symbol (USCS)	Soil Description
1430					
1435			NA	SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID; No soil samples analyzed. Blow count to cut sample 6/8/9.
1445	AP-BH4-10.5	10	See Side	SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (5 ppmv on PID); Soil sample analytical results: All ND except for TPH-d (16 mg/kg) and TPH-mo (30 mg/kg); Blow count to cut sample 7/10/12.
1455	AP-BH4-15.5		NA	SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (<5 ppmv on PID); No soil samples analyzed. Blow count to cut sample 10/11/12.
1510	AP-BH4-20.5	20	See Side	SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID; Soil sample analytical results all ND except TPH-d (14 mg/kg) and TPH-mo(17 mg/kg); Blow count to cut sample 10/12/15.
1525	AP-BH4-25.5		NA	ML	CLAYEY SILT: Light brown, moist, micaceous, no petroleum odor (0 ppmv on PID); Soil sample not analyzed. Blow count to cut sample: 11/12/14.
1535	AP-BH4-30.5	30	See Side	ML	CLAYEY SILT: Light brown, moist, micaceous, no petroleum odor (0 ppmv on PID); Soil sample analytical results all ND except TPH-d (9.7 mg/kg) and TPH-mo(14 mg/kg). Blow count to cut sample: 11/12/14. Water table at 33.0 feet bgs
1545	AP-BH4-35.0		NA	SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID; Soil sample not analyzed. Blow count to cut sample 12/13/14.
1555	AP-BH4-40.5	40	See Side	SM	MEDIUM TO COARSE GRAINED SAND: Light brown, wet, iron stained, micaceous, no petroleum odor (0 ppmv on PID). Soil sample analytical results all ND except for TPH-d (6.8 mg/kg). Blow count to cut sample: 10/14/16.
				SM	No sample recovered
					Total Depth: 45.5' bgs.
		50			
		60			

WELL COMPLETION NOTES: Solid 2" diameter schedule 40 PVC to 25 feet below ground surface; bentonite chip seal from 22.0 to 24.0 feet below ground surface; screen set from 25.0 to 45.0 feet below ground level with 0.010 screen; concrete slurry cement grout from 22.0 to 0.5 feet bgs; Monterey #212 filter sand pack; locking cap on top of case with traffic box set in ground. End cap is set at base of screened pipe.

Well Casing Elevation is 169.73 feet above mean sea level
Coordinates of well are 2355604.56 feet north, 6136042.25 feet east, California State Plane Coordinate System Zone 4, NAD83.
Coordinates: Latitude 37.28890097 degrees North, Longitude -120.463969 degrees West
Longitude and Latitude Horizontal coordinates tied to USC&GS Benchmark A85 (PID HS1152), WGS 1984 Spheroid, NAD83 Projection

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GEO TRACKER ID: T0604713690
P.M. 13.20

SOIL BORING REPORT

Project	Anderson-Polzine
Location	1375 Brantley Street, Merced
Drilled By	Woodward Drilling Inc.
Drilling Method	AGS 9030 Geoprobe (continuous core)
Bit Type	Push
Bit Size	1"
Sampling	Continuous (48") plastic tubes
Project Number	
Start Date/Time	08/11/2006-0940
Finish Date/Time	08/11/2006-1159
Logged By	SGM
Reviewed By	
Weather/Temp(°F)	Clear / Hot
Field Monitor	PID - Mini-Rae 2000 #4132
Surface Conditions	Dirt/Asphalt/Rock
Ground Elevation	(Mean Sea Level) 169.0'

Water Level Information

Depth to Groundwater (ft)	33.0'		
Date - Time	08/11/2006		
Depth of Hole (ft)	38.0'		

Time	Sampled Depth Interval and Number	Laboratory Analysis	Soil Group Symbol (USCS)	Soil Description
1430				
1435	AP-BH5-5.5	See Side	SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (10 ppmv on PID; Analytical results: benzene (0.44 mg/kg); toluene (0.034 mg/kg); ethylbenzene (0.014 mg/kg); xylene (0.078 mg/kgk); TPH-g (ND); TPH-d (3.8 mg/kg).
1445	AP-BH5-10.5	See Side	SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (15 ppmv on PID); Analytical results: benzene (0.46 mg/kg); toluene (1.5 mg/kg); ethylbenzene (3.4 mg/kg); xylene (18 mg/kgk); TPH-g (250 mg/kg); TPH-d (760 mg/kg); TPH-mo (240 mg/kg).
1455	AP-BH5-15.5	See Side	SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (<5 ppmv on PID); Analytical results: benzene (0.0083 mg/kg); toluene (0.017 mg/kg); ethylbenzene (0.13 mg/kg); xylene (0.63 mg/kgk); TPH-g (13 mg/kg); TPH-d (240 mg/kg).
1510	AP-BH5-20.5	See Side	SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID; Analytical results: benzene (0.006 mg/kg); ethylbenzene (0.013 mg/kg); xylene (0.056 mg/kg); TPH-d (1.1 mg/kg).
1525	AP-BH5-25.5	All ND	ML	CLAYEY SILT: Light brown, moist, micaceous, no petroleum odor (0 ppmv on PID); All analytical results are ND.
1535	AP-BH5-30.5	All ND	ML	CLAYEY SILT: Light brown, moist, micaceous, no petroleum odor (0 ppmv on PID); Soil sample analytical results all ND.
		▽		Water table at 33.0 feet bgs
1545	AP-BH5-35.0	All ND	SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID). Soil sample analytical results all ND.
				Total Depth: 45.5' bgs.

Depth (ft): 10, 20, 30, 40, 50, 60

BORE HOLE COMPLETION NOTES: Bore hole sampled to total depth with continuous core. Soil hole backfilled with neat cement grout as per MCDPH permit requirements using a tremie pipe from bottom of hole to ground surfce.

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GEO TRACKER ID: T0604713690
P.M. 13.20

SOIL BORING REPORT

Project	Anderson-Polzine	Project Number	
Location	1375 Brantley Street, Merced	Start Date/Time	08/11/2006-1210
		Finish Date/Time	08/11/2006-1450
Drilled By	Woodward Drilling Inc.	Logged By	SGM
		Reviewed By	
Drilling Method	AGS 9030 Geoprobe (continuous core)	Weather/Temp(°F)	Clear / Hot
Bit Type	Push	Field Monitor	PID - Mini-Rae 2000 #4132
Bit Size	1"	Surface Conditions	Dirt/Asphalt/Rock
Sampling	Continuous (48") plastic tubes	Ground Elevation	(Mean Sea Level) 169.0'

Water Level Information

Depth to Groundwater (ft)	33.0'		
Date - Time	08/11/2006		
Depth of Hole (ft)	38.0'		

Time	Sampled Depth Interval and Number	Soil Boring Schematic	Depth (ft)	Laboratory Analysis	Graphic Log	Soil Group Symbol (USCS)	Soil Description
1210							
1250	AP-BH6-5.5			See Side		SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (5 ppmv on PID; Soil sample analytical results: benzene (0.15 mg/kg); toluene (0.28 mg/kg); ethylbenzene (0.19 mg/kg); xylene (1.1 mg/kg); TPH-g (20 mg/kg); TPH-d (46 mg/kg).
1305	AP-BH6-10.5		10	See Side		SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (5 ppmv on PID); Soil sample analytical results: All ND except for TPH-d (1.2 mg/kg).
1320	AP-BH6-15.5			See Sid		SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (<5 ppmv on PID); No soil samples analyzed. Blow count to cut sample 10/11/12.
1330	AP-BH6-20.5		20	See Side		SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID; Soil sample analytical results all ND except TPH-d (14 mg/kg).
1345	AP-BH6-25.5			All ND		ML	CLAYEY SILT: Light brown, moist, micaceous, no petroleum odor (0 ppmv on PID); Soil sample analytical results all ND.
1355	AP-BH6-30.5		30	All ND		ML	CLAYEY SILT: Light brown, moist, micaceous, no petroleum odor (0 ppmv on PID); Soil sample analytical results all ND.
				▽			Water table at 33.0 feet bgs
1405	AP-BH6-35.0			See Side		SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID); Soil sample analytical results all ND except TPH-d (2.5 mg/kg).
							Total Depth: 38.0' bgs.
			40				
			50				
			60				

BORE HOLE COMPLETION NOTES: Bore hole sampled to total depth with continuous core. Soil hole backfilled with neat cement grout as per MCDPH permit requirements using a tremie pipe from bottom of hole to ground surfce.

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GEO TRACKER ID: T0604713690
P.M. 13.20

SOIL BORING REPORT

Project	Anderson-Polzine	Project Number	
Location	1375 Brantley Street, Merced	Start Date/Time	02/06/2007
Drilled By	V&W Drilling Inc.	Finish Date/Time	02/06/2007
Drilling Method	AGS 9030 Geoprobe (continuous core)	Logged By	SGM
Bit Type	Push	Reviewed By	
Bit Size	1"	Weather/Temp(°F)	Clear / Cool
Sampling	Continuous (48") plastic tubes	Field Monitor	PID - Mini-Rae 2000 #4132
		Surface Conditions	Dirt/Asphalt/Rock
		Ground Elevation	(Mean Sea Level) 169.0'

Water Level Information

Depth to Groundwater (ft)			
Date - Time			
Depth of Hole (ft)			

Time	Sampled Depth Interval and Number	Soil Boring Schematic	Depth (ft)	Laboratory Analysis	Graphic Log	Soil Group Symbol (USCS)	Soil Description
0825	AP-BH7-4.0-5.5			NA		SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (5 ppmv on PID.
0845	AP-BH7-9.5-11.0		10	See Side		SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (5 ppmv on PID); Soil sample analytical results: benzene (0.34 mg/kg; TPH-g (1100 mg/kg). Total lead (245 mg/kg).
0905	AP-BH7-13.5-15.0			NA		SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (<5 ppmv on PID).
0920	AP-BH7-17.5-19.0		20	See Side		SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (10 ppmv on PID; Soil sample analytical results all ND except TPH-g (130 mg/kg). Total lead (2.89 mg/kg).
0925	AP-BH7-23.0						
0936	AP-BH7-26.0			NA		ML	CLAYEY SILT: Light brown, moist, micaceous, no petroleum odor (0 ppmv on PID).
							Total Depth: 26.0' bgs.
			30				
			40				
			50				
			60				

BORE HOLE COMPLETION NOTES: Bore hole sampled to total depth with continuous core. Soil hole backfilled with neat cement grout as per MCDPH permit requirements using a tremie pipe from bottom of hole to ground surfce.

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GEO TRACKER ID: T0604713690
P.M. 13.20

SOIL BORING REPORT

Project	Anderson-Polzine
Location	1375 Brantley Street, Merced
Drilled By	V&W Drilling Inc.
Drilling Method	AGS 9030 Geoprobe (continuous core)
Bit Type	Push
Bit Size	1"
Sampling	Continuous (48") plastic tubes
Project Number	
Start Date/Time	02/06/2007
Finish Date/Time	02/06/2007
Logged By	SGM
Reviewed By	
Weather/Temp(°F)	Clear / Cool
Field Monitor	PID - Mini-Rae 2000 #4132
Surface Conditions	Dirt/Asphalt/Rock
Ground Elevation	(Mean Sea Level) 169.0'

Water Level Information

Depth to Groundwater (ft)			
Date - Time			
Depth of Hole (ft)			

Time	Sampled Depth Interval and Number	Soil Boring Schematic	Depth (ft)	Laboratory Analysis	Graphic Log	Soil Group Symbol (USCS)	Soil Description
1000	AP-BH8-4.0-5.5			NA		SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (5 ppmv on PID.
			10				
1005	AP-BH8-13.0-14.0			See Side		SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (5 ppmv on PID); Soil sample analytical results: All ND. Total lead (3.64 mg/kg).
						SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (<5 ppmv on PID).
			20				
1015	AP-BH8-22.0-23.0			See Side		ML	CLAYEY SILT: Light brown, moist, micaceous, no petroleum odor (0 ppmv on PID). Soil sample analytical results: All ND. Total lead (6.31 mg/kg). Total Depth: 23.0' bgs.
			30				
			40				
			50				
			60				

BORE HOLE COMPLETION NOTES: Bore hole sampled to total depth with continuous core. Soil hole backfilled with neat cement grout as per MCDPH permit requirements using a tremie pipe from bottom of hole to ground surfce.

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GEO TRACKER ID: T0604713690
P.M. 13.20

SOIL BORING REPORT

Project	Anderson-Polzine	Project Number	
Location	1375 Brantley Street, Merced	Start Date/Time	02/06/2007 — Finish Date/Time 02/06/2007
Drilled By	V&W Drilling Inc.	Logged By	SGM — Reviewed By
Drilling Method	AGS 9030 Geoprobe (continuous core)	Weather/Temp(°F)	Clear / Cool
Bit Type	Push — Bit Size 1"	Field Monitor	PID - Mini-Rae 2000 #4132
Sampling	Continuous (48") plastic tubes	Surface Conditions	Dirt/Asphalt/Rock
		Ground Elevation	(Mean Sea Level) 169.0'

Water Level Information

Depth to Groundwater (ft)			
Date - Time			
Depth of Hole (ft)			

Time	Sampled Depth Interval and Number	Soil Boring Schematic	Depth (ft)	Laboratory Analysis	Graphic Log	Soil Group Symbol (USCS)	Soil Description
1400						SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (5 ppmv on PID. Boring halted when concrete footing hit at 3.5' bgs.
							Total Depth: 3.5' bgs.
			10				
			20				
			30				
			40				
			50				
			60				

BORE HOLE COMPLETION NOTES: Bore hole sampled to total depth with continuous core. Soil hole backfilled with neat cement grout as per MCDPH permit requirements using a tremie pipe from bottom of hole to ground surfce.

SOIL BORING REPORT

Project	Anderson-Polzine	Project Number	
Location	1375 Brantley Street, Merced	Start Date/Time	02/06/2007
Drilled By	V&W Drilling Inc.	Finish Date/Time	02/06/2007
Drilling Method	AGS 9030 Geoprobe (continuous core)	Logged By	SGM
Bit Type	Push	Reviewed By	
Bit Size	1"	Weather/Temp(°F)	Clear / Hot
Sampling	Continuous (48") plastic tubes	Field Monitor	PID - Mini-Rae 2000 #4132
		Surface Conditions	Dirt/Asphalt/Rock
		Ground Elevation	(Mean Sea Level) 169.0'

Water Level Information

Depth to Groundwater (ft)		
Date - Time		
Depth of Hole (ft)		

Time	Sampled Depth Interval and Number	Laboratory Analysis	Soil Group Symbol (USCS)	Soil Description
1305				
1315	AP-BH10-4.0-5.0	See Side	SM	FINE SILTY SAND (Artificial Fill): Dark green, moist, moderate petroleum hydrocarbon odor (50 ppmv) on PID. Analytical results: benzene (0.44 mg/kg); TPH-g (430), all others ND. Total lead (5.27 mg/kg).
1320	AP-BH10-11.0-12.0	See Side	SM	MEDIUM TO FINE SILTY SAND: Dark green to black, moist, micaceous, slight petroleum hydrocarbon odor (5 ppmv on PID). Analytical results: all ND. Total lead (3.58 mg/kg)
1325	AP-BH10-14.0-15.0	NA		MEDIUM TO FINE SILTY SAND: Dark green to black, moist, micaceous, slight petroleum hydrocarbon odor (5 ppmv on PID).
1330	AP-BH10-18.0-19.0	See Side		MEDIUM TO FINE SILTY SAND: Dark green to black, moist, micaceous, slight petroleum hydrocarbon odor (5 ppmv on PID). Analytical results: benzene (0.02 mg/kg); TPH-g (1.7 mg/kg). Total lead (4.41 mg/kg).
			SM	MEDIUM TO FINE SILTY SAND: Dark green, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID).
1345	AP-BH10-25.0-26.0	See Side	ML	CLAYEY SILT: Dark green to brown, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID). Analytical results: All ND. Total lead (7.11 mg/kg).
				Total Depth: 26' bgs.

Depth (ft): 10, 20, 30, 40, 50, 60

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GEO TRACKER ID: T0604713690
P.M. 13.20

SOIL BORING REPORT

Project	Anderson-Polzine	Project Number	
Location	1375 Brantley Street, Merced	Start Date/Time	02/06/2007
Drilled By	V&W Drilling Inc.	Finish Date/Time	02/06/2007
Drilling Method	AGS 9030 Geoprobe (continuous core)	Logged By	SGM
Bit Type	Push	Reviewed By	
Bit Size	1"	Weather/Temp(°F)	Clear / Hot
Sampling	Continuous (48") plastic tubes	Field Monitor	PID - Mini-Rae 2000 #4132
		Surface Conditions	Dirt/Asphalt/Rock
		Ground Elevation	(Mean Sea Level) 169.0'

Water Level Information

Depth to Groundwater (ft)			
Date - Time			
Depth of Hole (ft)			

Time	Sampled Depth Interval and Number	Soil Boring Schematic	Depth (ft)	Laboratory Analysis	Graphic Log	Soil Group Symbol (USCS)	Soil Description
1030							
1035	AP-BH11-3.0-4.0			See Side		SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID. Analytical results: benzene (0.01 mg/kg); TPH-g (1.8 mg/kg). Total lead (6.01 mg/kg).
1040	AP-BH11-7.0-8.0			NA		SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (5 ppmv on PID).
			10				
1055	AP-BH11-14.0-15.0			NA		SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, slight petroleum hydrocarbon odor (<5 ppmv on PID).
1105	AP-BH11-19.5-20.0			NA			
			20				
1115	AP-BH11-22.5-23.5			See Side		ML	CLAYEY SILT: Light brown, moist, micaceous, no petroleum odor (0 ppmv on PID). Analytical results: All ND. Total lead (4.25 mg/kg).
							Total Depth: 23.5' bgs.
			30				
			40				
			50				
			60				

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GEO TRACKER ID: T0604713690
P.M. 13.20

SOIL BORING REPORT

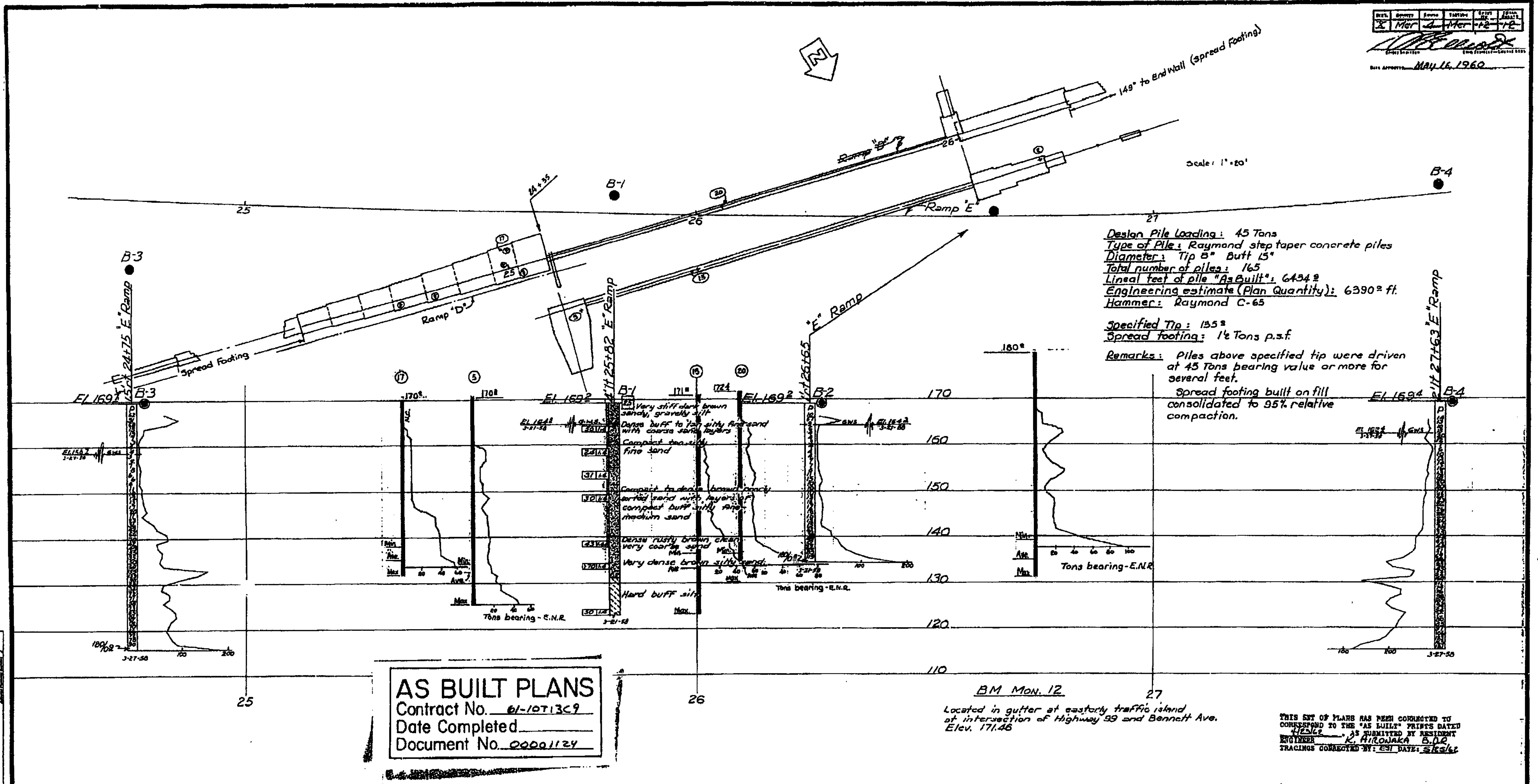
Project	Anderson-Polzine	Project Number	
Location	1375 Brantley Street, Merced	Start Date/Time	02/06/2007 Finish Date/Time 02/06/2007
Drilled By	V&W Drilling Inc.	Logged By	SGM Reviewed By
Drilling Method	AGS 9030 Geoprobe (continuous core)	Weather/Temp(°F)	Clear / Hot
Bit Type	Push Bit Size 1"	Field Monitor	PID - Mini-Rae 2000 #4132
Sampling	Continuous (48") plastic tubes	Surface Conditions	Dirt/Asphalt/Rock
		Ground Elevation	(Mean Sea Level) 169.0'

Water Level Information

Depth to Groundwater (ft)			
Date - Time			
Depth of Hole (ft)			

Time	Sampled Depth Interval and Number	Soil Boring Schematic	Depth (ft)	Laboratory Analysis	Graphic Log	Soil Group Symbol (USCS)	Soil Description
1140	AP-BH12-4.0-5.0			NA		SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID.
1150	AP-BH12-7.0-8.0		10	See Side		SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID). Analytical results: All ND. Total lead (4.45 mg/kg).
1200	AP-BH12-13.0-14.0			See Side		SM	MEDIUM TO FINE SILTY SAND: Light brown, moist, micaceous, no petroleum hydrocarbon odor (0 ppmv on PID). Analytical results: All ND.
1215	AP-BH12-20.0-21.0		20	NA		ML	CLAYEY SILT: Light brown, moist, micaceous, no petroleum odor (0 ppmv on PID).
1230	AP-BH12-23.0-24.0			See Side		ML	CLAYEY SILT: Light brown, moist, micaceous, no petroleum odor (0 ppmv on PID). Analytical results: All ND. Total lead (5.52 mg/kg).
							Total Depth: 24' bgs.
			30				
			40				
			50				
			60				

GEO TRACKER ID: T0604713690
P.M. 13.20



Design Pile Loading: 45 Tons
Type of Pile: Raymond step taper concrete piles
Diameter: Tip 8" Butt 15"
Total number of piles: 165
Lineal feet of pile "As Built": 6434±
Engineering estimate (Plan Quantity): 6390± ft.
Hammer: Raymond C-65

Specified Tip: 135±
Spread footing: 1½ Tons p.s.f.

Remarks: Piles above specified tip were driven at 45 Tons bearing value or more for several feet.
Spread footing built on fill consolidated to 95% relative compaction.

BM Mon. 12
Located in gutter at easterly traffic island at intersection of Highway 99 and Bennett Ave.
Elev. 171.46

AS BUILT PLANS
Contract No. 61-10T13C9
Date Completed
Document No. 00001124

THIS SET OF PLANS HAS BEEN CORRECTED TO CORRESPOND TO THE "AS BUILT" PRINTS DATED 4/25/62, AS SUBMITTED BY RESIDENT ENGINEER K. HIRONAKA B.O.R.
TRACINGS CORRECTED BY: ESI DATE: 5/25/62

Classification of Material Based on Standard Grade Size Limits

Diagram showing the basis for estimates of grade size distribution used in determination of class names. If gravel is present in appreciable amounts the term "gravelly" may be added to the class name, viz. "gravelly sand". The terms "coarse", "medium" and "fine" when used to describe sand, silt and gravel refer to standard grade size limits.

Legend of Earth Materials
Gravel, Sand, Silt, Clay, Sandy Clay or Clayey Sand, Sandy Silt or Silty Sand, Silty Clay or Clayey Silt, Peat and/or Organic Matter, Fill Material, Igneous Rock, Sedimentary Rock, Metamorphic Rock

Legend of Boring Operations
Plan of any boring; Penetrometer; 2½" Cone Penetrometer; Sampler boring (dry); Rotary boring (wet); Auger boring (dry); Jet boring; Core boring; Test pit
1" Soil Tube — Rotary Boring — Penetration Boring

NOTES
[redacted]
Classification of earth materials as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

YOSEMITE WAY ON-RAMP UNDERCROSSING

LOG OF TEST BORINGS

Scale 1" = 10' | Bridge 39-141 | File | Drawing C-6008-12

PREL. DRAWING NO. P-6008 14

FED. ROAD DIST. 7 | STATE CAL. | SHEET 130 | TOTAL SHEETS 242
Date approved: May 16, 1960

BRIDGE DEPARTMENT

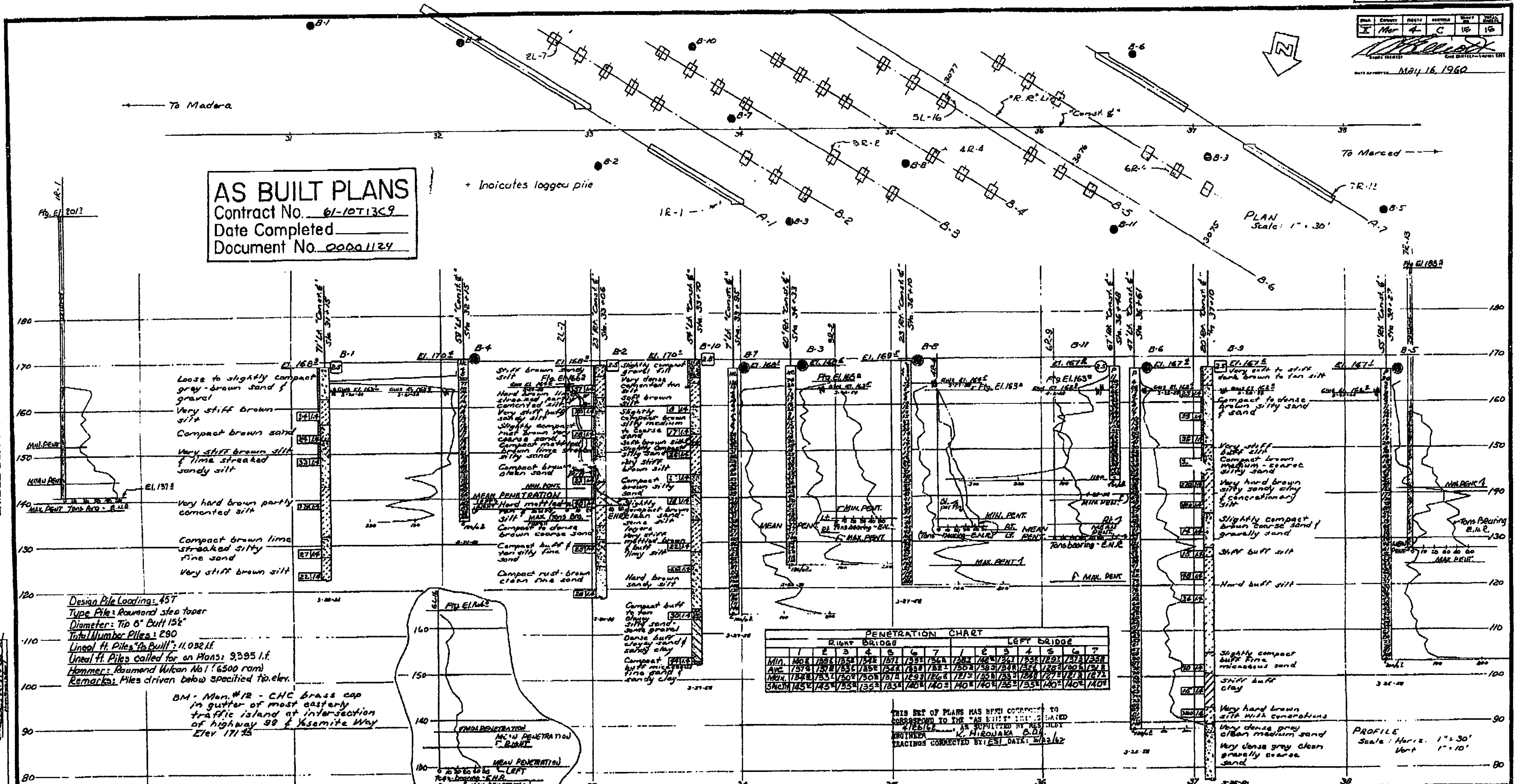
130

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.
DATE ______ SIGNATURE ______ TITLE ______

DIST.	COUNTY	ROUTE	SECTION	SHEET NO.	TOTAL SHEETS
X	Mer	4	C	15	15

May 16, 1960

AS BUILT PLANS
Contract No. 61-10T13C9
Date Completed
Document No. 00001124



Design Pile Loading: 45T
Type Pile: Raymond step taper
Diameter: Tip 8" Butt 15½"
Total Number Piles: 290
Lineal ft. Piles "As Built": 11,092 l.f.
Lineal ft. Piles called for on Plans: 9,395 l.f.
Hammer: Raymond Vulcan No. 1 (6500 ram)
Remarks: Piles driven below specified tip elev.

BM - Mon. #12 - CHC brass cap in gutter at most easterly traffic island at intersection of highway 99 & Yosemite Way
Elev 171.15

PENETRATION CHART														
	RIGHT BRIDGE							LEFT BRIDGE						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Min.	140.8	139.8	135.8	134.8	137.1	139.8	156.4	138.2	146.0	136.1	133.5	129.3	137.2	135.8
Avg.	137.9	137.8	153.5	135.2	134.4	133.8	132.1	130.2	138.3	134.8	132.4	128.2	130.5	131.8
Max.	134.8	133.1	130.9	130.8	131.4	129.3	126.8	127.5	135.8	133.3	126.8	127.5	121.3	127.2
Spec. Tip	145.0	145.0	135.0	135.0	135.0	140.0	140.0	140.0	140.0	135.0	135.0	140.0	140.0	140.0

THIS SET OF PLANS HAS BEEN CORRECTED TO CORRESPOND TO THE "AS BUILT" PLANS DATED 4/25/62, AS SUBMITTED BY RESIDENT ENGINEER K. HIRONAKA B.O.E.
TRACINGS CORRECTED BY: ESI DATE: 5/23/62

CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

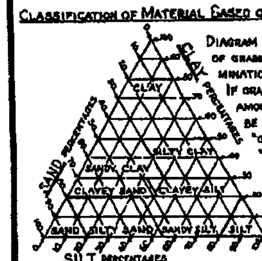


DIAGRAM SHOWING THE BASIS FOR ESTIMATES OF GRADE SIZE DISTRIBUTION USED IN DETERMINATION OF CLASS NAMES.
IF GRAVEL IS PRESENT IN APPRECIABLE AMOUNTS THE TERM "GRAVELLY" MAY BE ADDED TO THE CLASS NAME, VIZ. "GRAVELLY SAND". THE TERMS "COARSE", "MEDIUM" AND "FINE" WHEN USED TO DESCRIBE SAND, SILT AND GRAVEL REFER TO STANDARD GRADE SIZE LIMITS.

LEGEND OF EARTH MATERIALS

- Gravel
- Sand
- Silt
- Clay
- Sandy Clay or Clayey Sand
- Sandy Silt or Silty Sand
- Silty Clay or Clayey Silt
- Peat and/or Organic Matter
- Fill Material
- Igneous Rock
- Sedimentary Rock
- Metamorphic Rock

LEGEND OF BORING OPERATIONS

- Plan of any boring
- Penetrometer
- 2½" Cone Penetrometer
- Sampler boring (dry)
- Rotary boring (wet)
- Auger boring (dry)
- Jet boring
- Core boring
- Test pit

1" SOIL TUBE — ROTARY BORING — PENETRATION BORING

NOTES

[redacted]

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

EAST MERCED OVERHEAD
LOG OF TEST BORINGS

SCALE As Noted | BRIDGE 39-130 R/L | DRAWING C-5838-15

PHEL. DRAWING No. P-5838

PR-5838-4

107

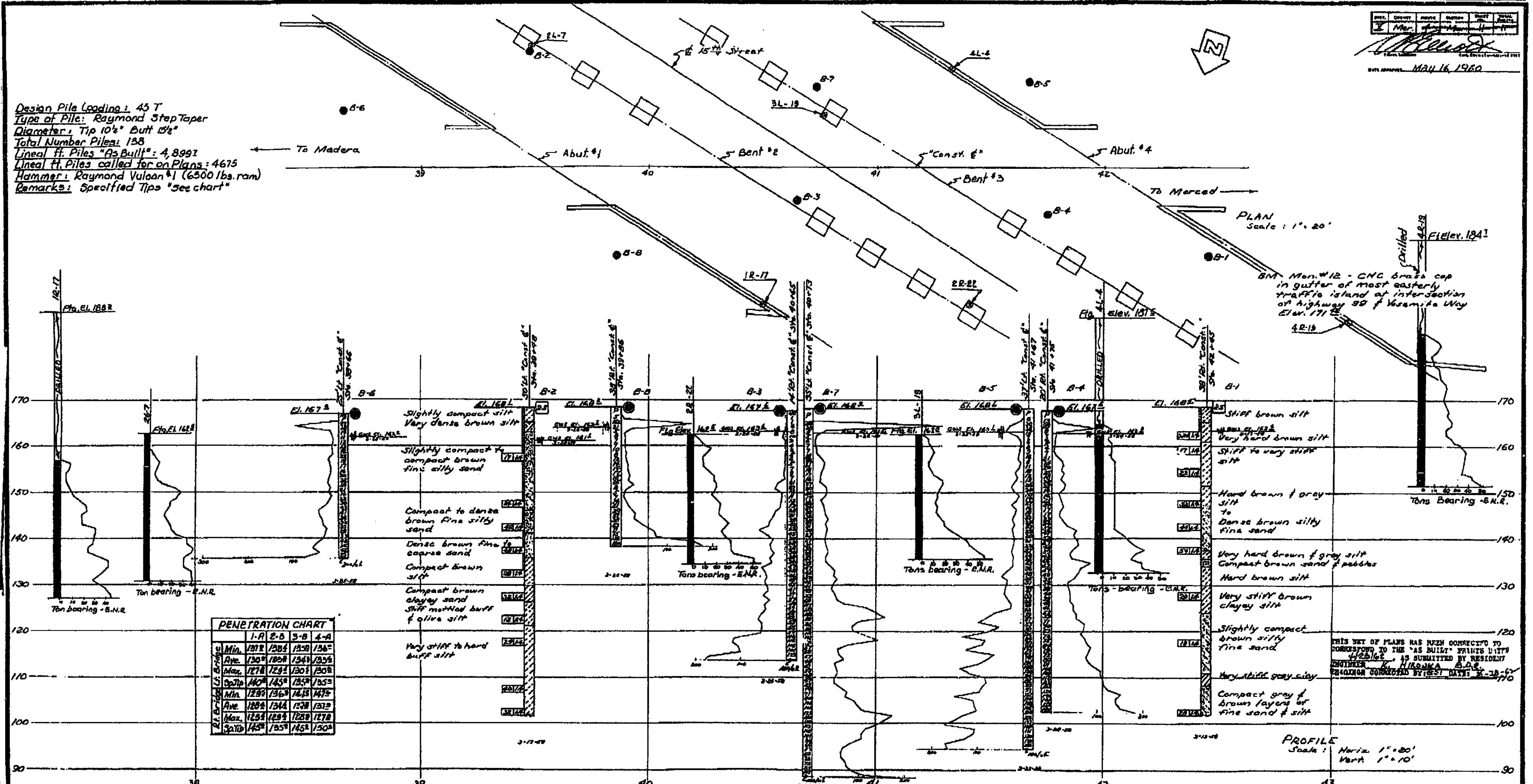
I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.
DATE ______ SIGNATURE ______ TITLE ______

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
7	CAL.			141	242

MAY 16, 1960

AS BUILT PLANS
Contract No. 61-10T13C9
Date Completed
Document No. 00001124

Design Pile Loading: 45 T
Type of Pile: Raymond Step Taper
Diameter: Tip 10½" Butt 15½"
Total Number Piles: 138
Lineal ft. Piles "As Built": 4,899±
Lineal ft. Piles called for on Plans: 4675
Hammer: Raymond Vulcan #1 (6500 lbs. ram)
Remarks: Specified Tips "see chart"



PENETRATION CHART		1-A	2-B	3-B	4-A
Lt. Bridge	Min.	131.2	138.6	135.8	136.0
	Ave.	130.8	132.8	134.1	133.6
	Max.	127.8	129.5	130.5	130.8
	Sp. Tip	140.0	145.0	135.0	135.3
Rt. Bridge	Min.	129.7	136.3	141.3	147.5
	Ave.	128.4	134.4	127.8	137.9
	Max.	125.5	129.5	128.8	127.8
	Sp. Tip	145.0	155.0	145.0	150.0

THIS SET OF PLANS HAS BEEN CORRECTED TO THE "AS BUILT" PLANS DATA AS SUBMITTED BY RESIDENT ENGINEER

CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

DIAGRAM SHOWING THE BASIS FOR ESTIMATES OF GRADE SIZE DISTRIBUTION USED IN DETERMINATION OF CLASS NAMES. IF GRAVEL IS PRESENT IN APPRECIABLE AMOUNTS THE TERM "GRAVELLY" MAY BE ADDED TO THE CLASS NAME, VIZ. "GRAVELLY SAND". THE TERMS "COARSE", "MEDIUM" AND "FINE" WHEN USED TO DESCRIBE SAND, SILT AND GRAVEL REFER TO STANDARD GRADE SIZE LIMITS.

LEGEND OF EARTH MATERIALS

GRAVEL — SILTY CLAY OR CLAYEY SILT
SAND — PEAT AND/OR ORGANIC MATTER
SILT — FILL MATERIAL
CLAY — IGNEOUS ROCK
SANDY CLAY OR CLAYEY SAND — SEDIMENTARY ROCK
SANDY SILT OR SILTY SAND — METAMORPHIC ROCK

LEGEND OF BORING OPERATIONS

PLAN OF ANY BORING
PENETROMETER
2½" CONE PENETROMETER
SAMPLER BORING (DRY)
ROTARY BORING (WET)
AUGER BORING (DRY)
JET BORING
CORE BORING
TEST PIT

1" SOIL TUBE
ROTARY BORING
PENETRATION BORING

NOTES

[redacted]

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

15TH STREET UNDERCROSSING

LOG OF TEST BORINGS

SCALE As Noted	BRIDGE 39-139 R/L	FILE E-39	DRAWING C-5986-1-1

PR-5986-2

141

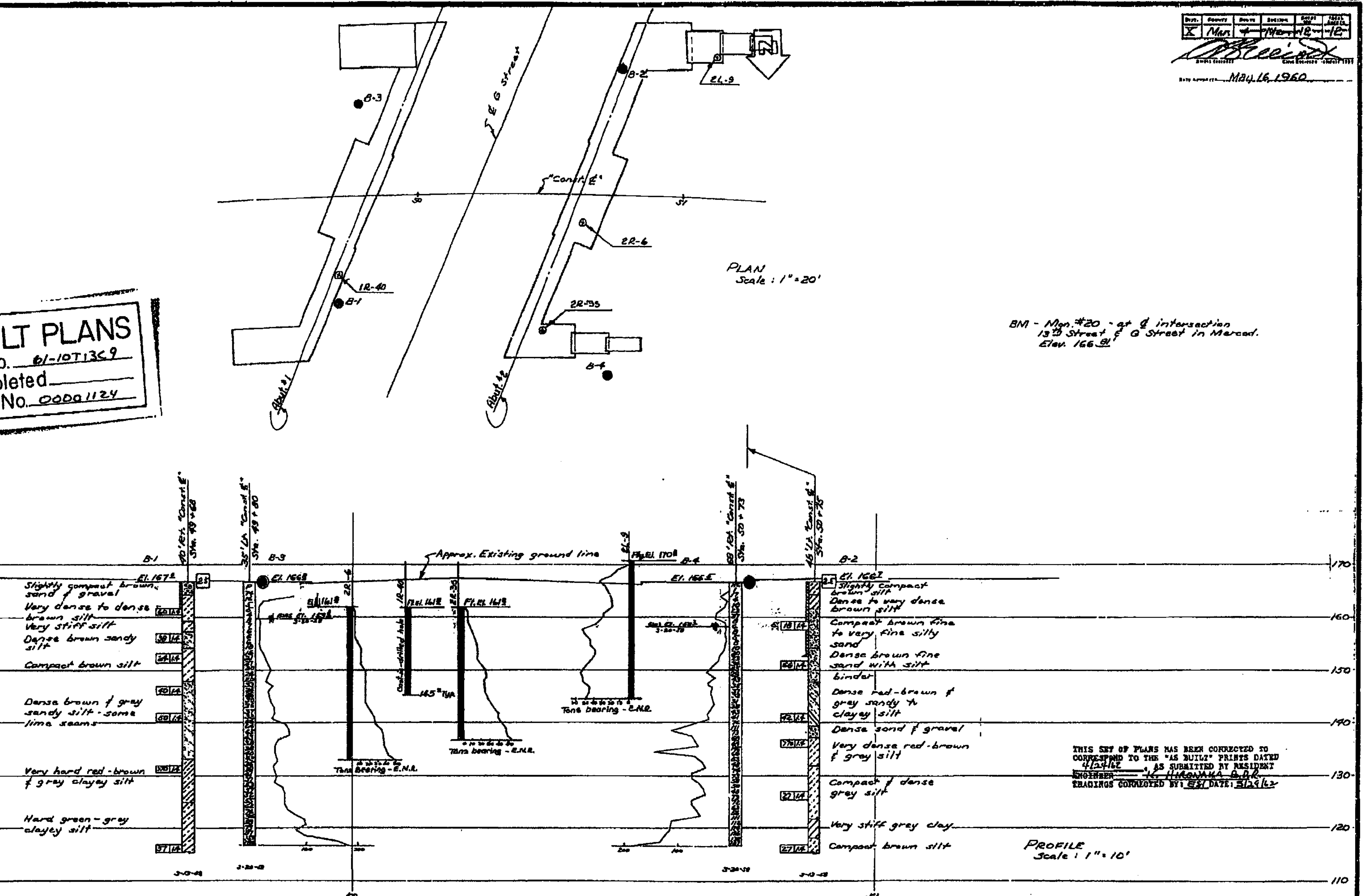
I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.
DATE ______ SIGNATURE ______ TITLE ______

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FEDERAL AID	SHEET NO.	TOTAL SHEETS
7	CAL.			153	242

DIST.	COUNTY	ROUTE	SECTION	SHEET NO.	TOTAL SHEETS
X	Mer.	4	Mer.	18	18

May 16, 1960

BRIDGE DEPARTMENT



Abut. No. 1 ⅘

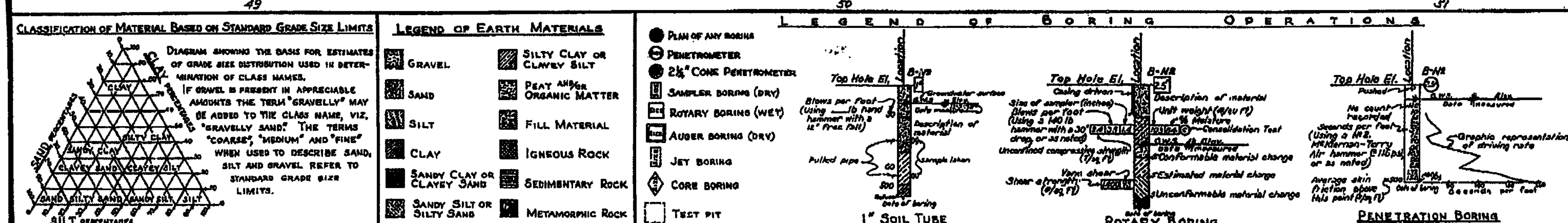
Design Pile Loading : 45 T
Type Pile : Cast-in-drilled-holes
Diameter : 16"
Total number of Piles : 126 "C.C.O. #13"
Lineal ft. Piles "As Built" C.C.O. #13 : 2148
Lineal ft. Piles on Plans : C.C.O. #13
Remarks : Driven and furnished piles were eliminated and cast-in-drilled-hole piles were constructed under C.C.O. #13 force account; because of 12 KV, P.G.&E. overhead wires.
Drilled to Specified Tip Elev. 145 ±

Abut. No. 2 ⅘

Design Pile Loading : 45 T
Type Pile : Raymond step-taper
Diameter : Tip 10½" Butt 15½"
Total Number Piles : 122
Lineal ft. Piles, "As Built" : 3280
Lineal ft. Piles called for on Plans : 4885
Hammer : Raymond Vulcan #1 (6500 lb. Ram)
Remarks : Specified Tip Elev. 145 ±

PENETRATION	Rt. Br.	Lt. Br.
Max.	130±	131±
Ave.	137±	139±
Min.	144±	146±

THIS SET OF PLANS HAS BEEN CORRECTED TO CORRESPOND TO THE "AS BUILT" PRINTS DATED 4/24/62, AS SUBMITTED BY RESIDENT ENGINEER K. HIRONAKA B.B.R.
TRACINGS CORRECTED BY: GSH DATE: 5/29/62



NOTES
[redacted]
Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

"G" STREET UNDERCROSSING

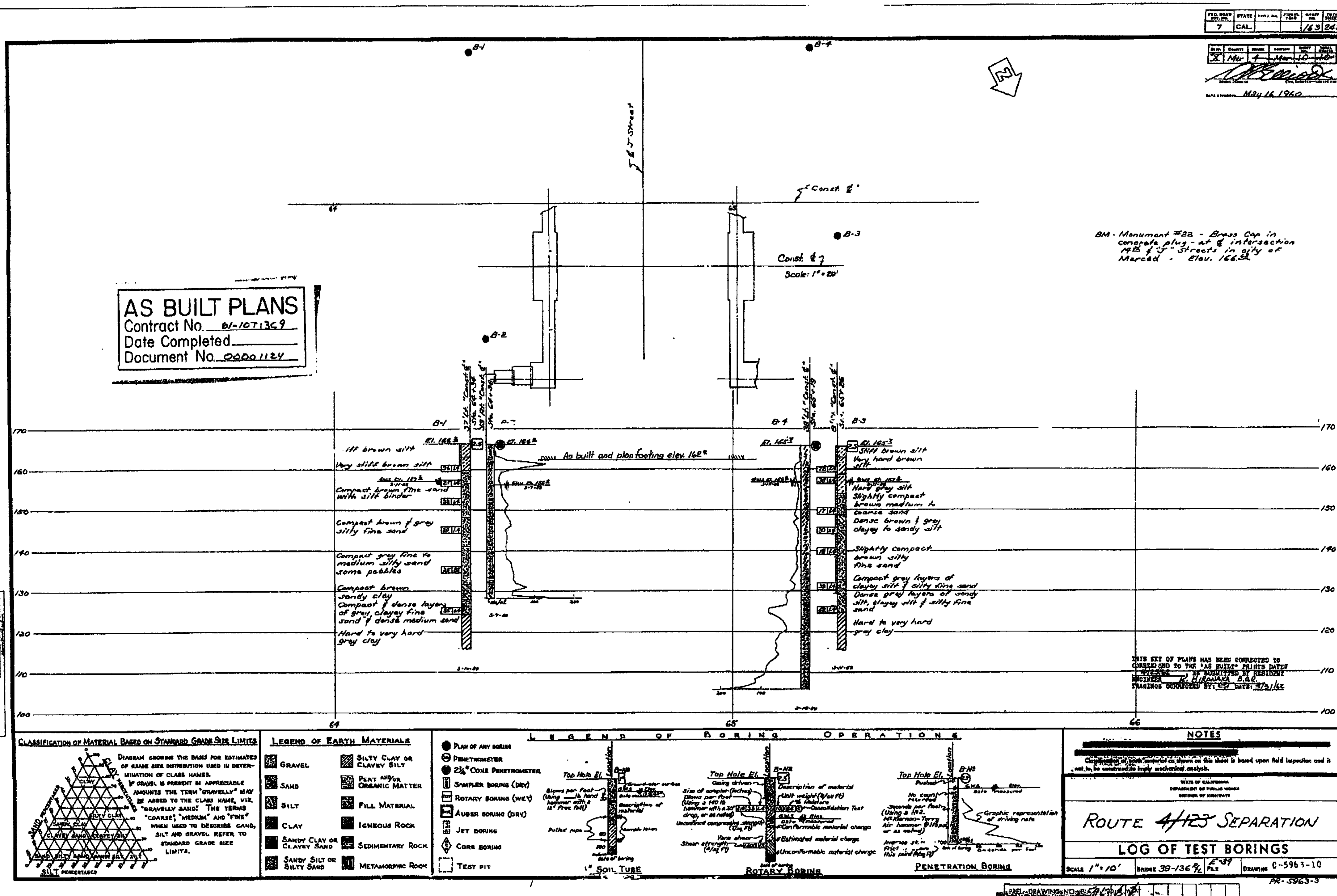
LOG OF TEST BORINGS

SCALE As Noted	BRIDGE 39-142 R/L	FILE	DRAWING C-6009-12

PHIL. DRAWING NO. P-6009 R
PR-C009-2

153

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.
DATE ______ SIGNATURE ______ TITLE ______



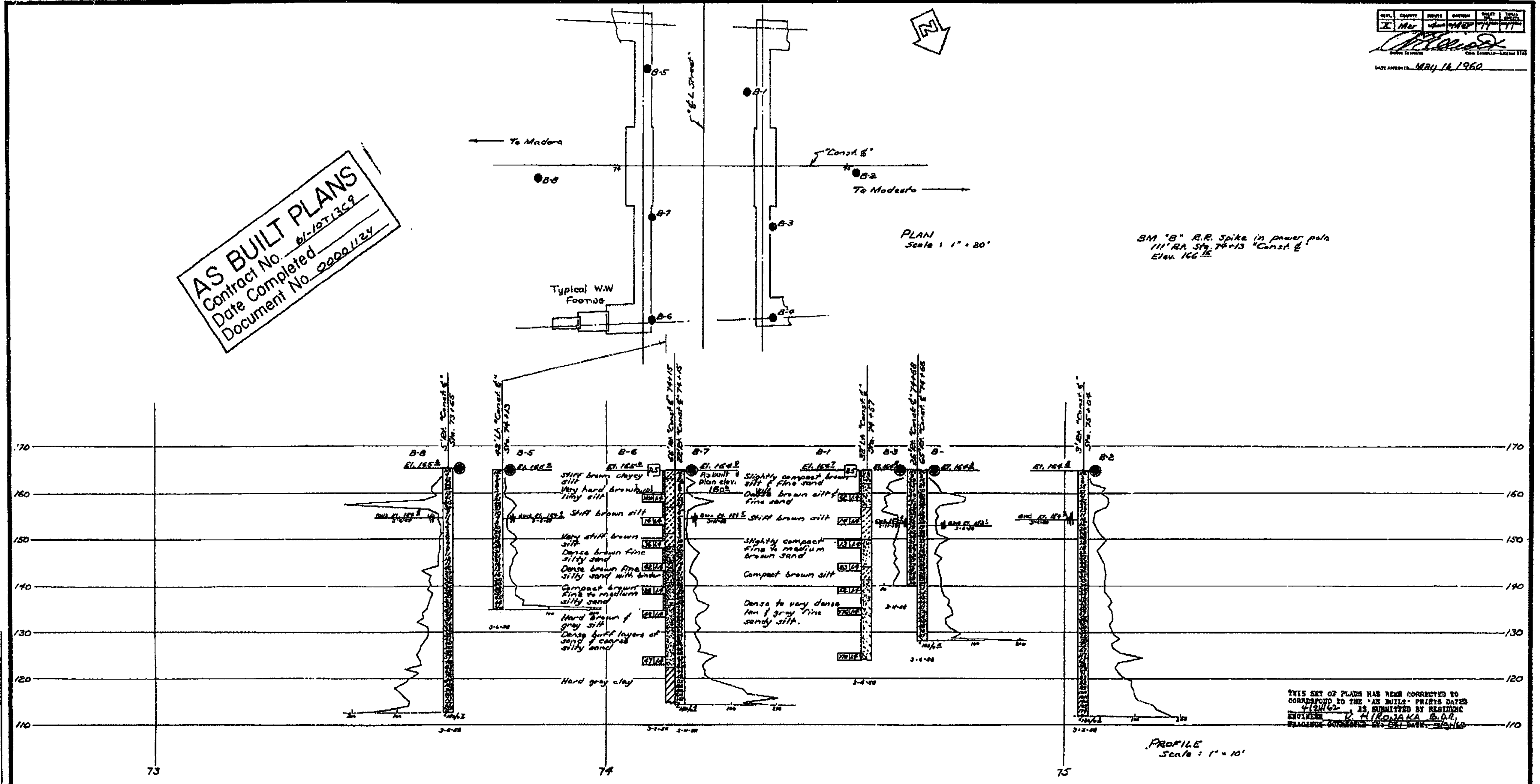
163

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE ________ SIGNATURE ________ TITLE ________

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
7	CAL.			174	242

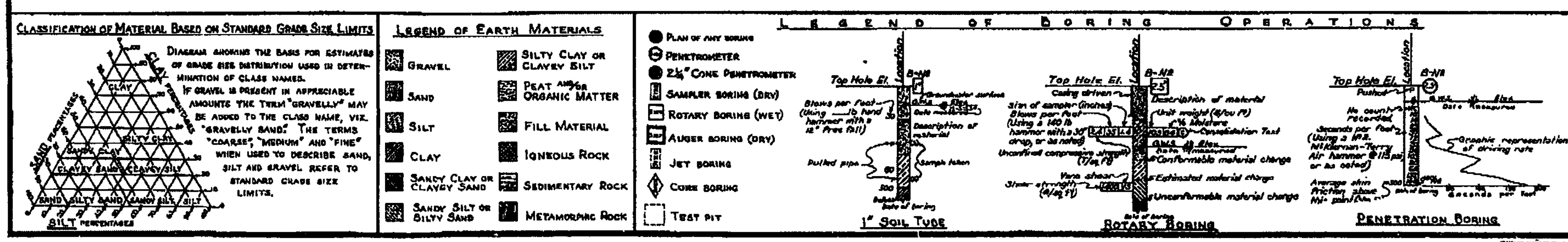
May 16, 1960



THIS SET OF PLANS HAS BEEN CORRECTED TO CORRESPOND TO THE "AS BUILT" PRINTS DATED ... AS SUBMITTED BY RESIDENT ENGINEER K. HIRONAKA B.D.R.

AS BUILT PLANS
Contract No. 61-10T1C9
Date Completed
Document No. 00001124

BRIDGE DEPARTMENT



NOTES

[redacted]

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STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

"L" STREET UNDERCROSSING

LOG OF TEST BORINGS

SCALE As Noted	BRIDGE 39-133	FILE E-39	DRAWING C-5957-11

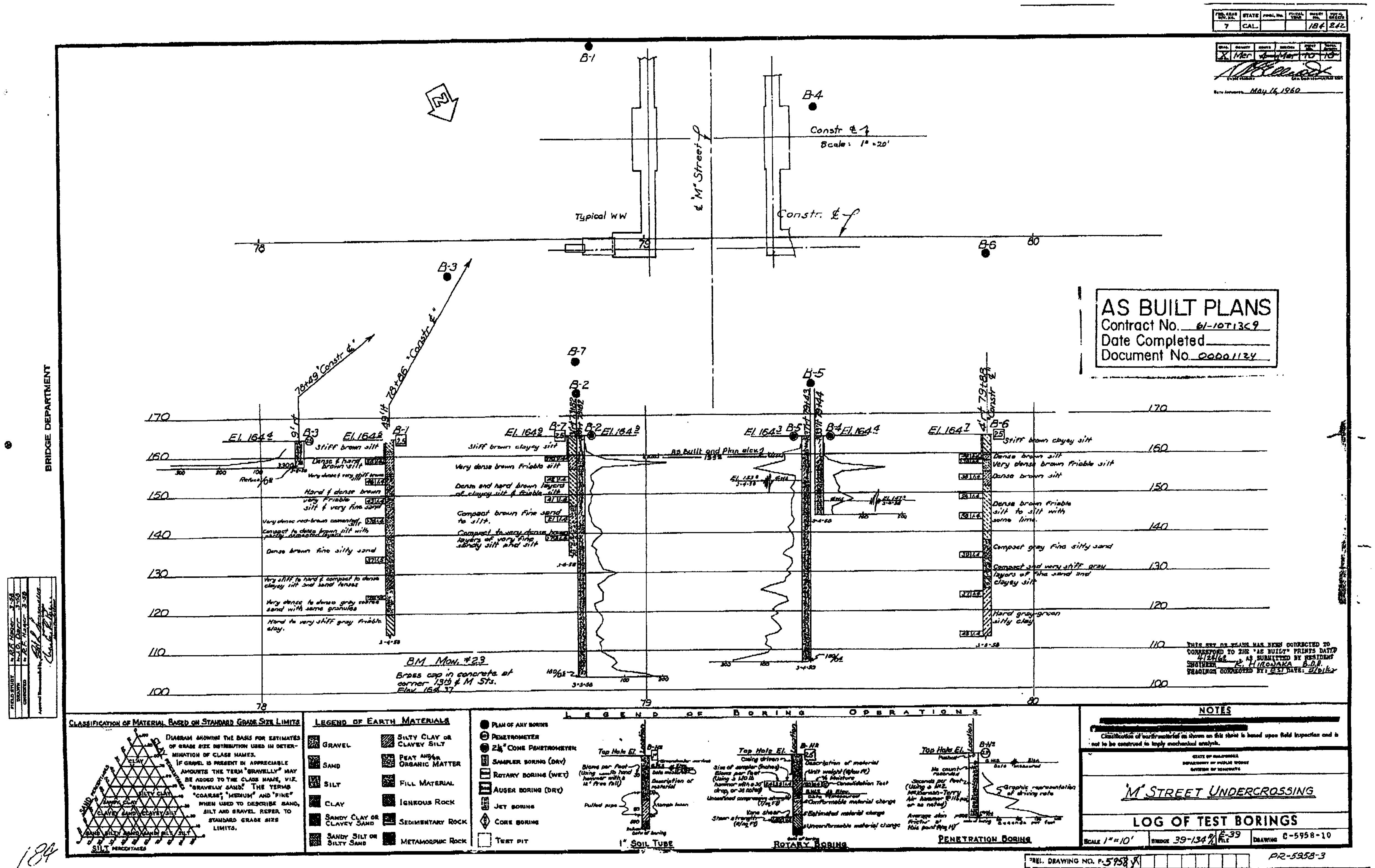
PREL. DRAWING NO. P-5957

PR-5957-3

174

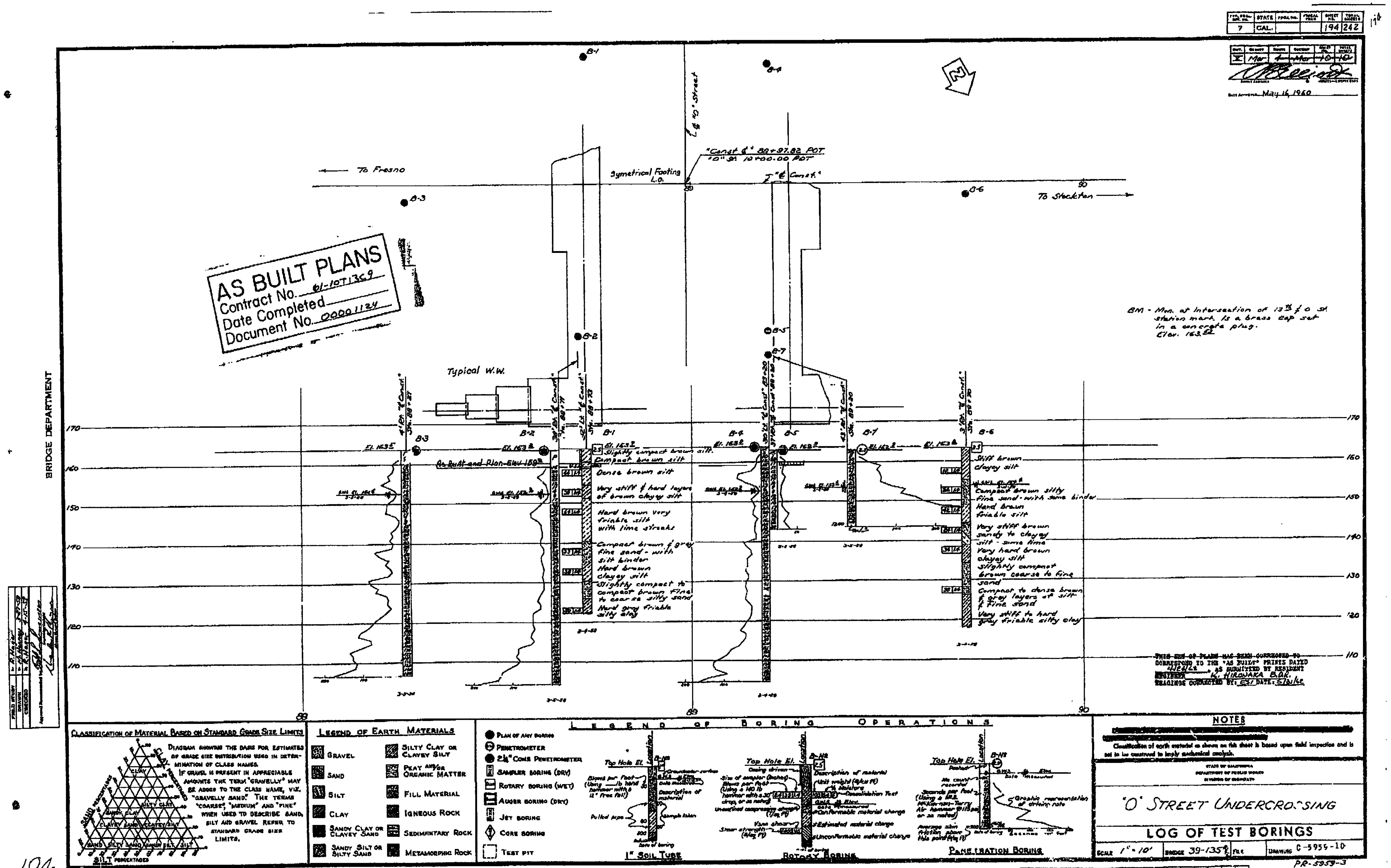
I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE ______ SIGNATURE ______ TITLE ______



I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

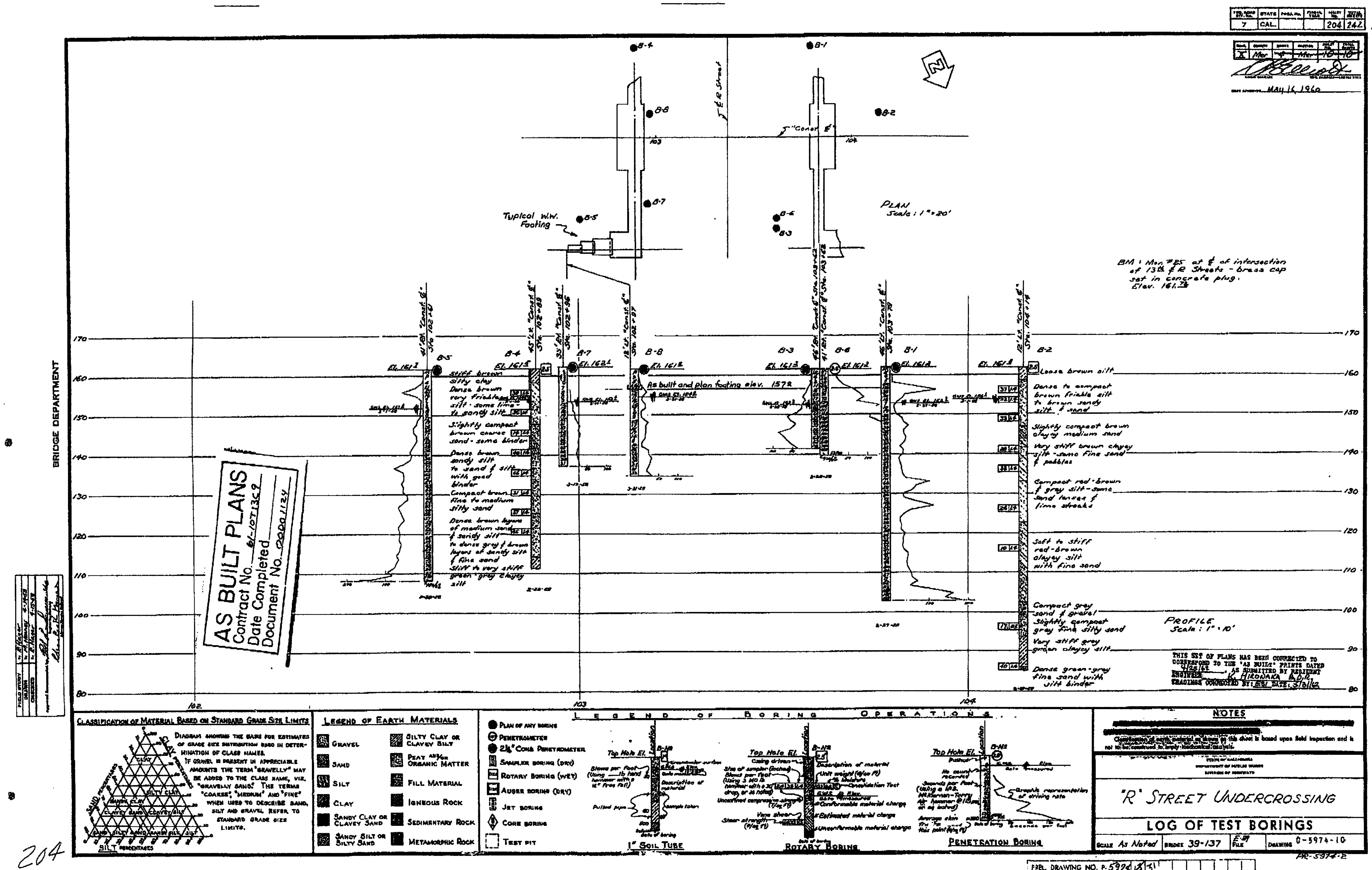
DATE ______ SIGNATURE ______ TITLE ______



194

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CA. PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE [illegible] SIGNATURE [illegible] TITLE [illegible]



I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE ______ SIGNATURE ______ TITLE ______

ETIC ENGINEERING

LOG OF SOIL BORING: **SB1**	CLIENT	SITE NUMBER	LOCATION
	WRBD	TMAPPLE	1619 Sycamore Ave Atwater, California

DRILLING AND SAMPLING METHODS: 6600 Geoprobe Track Rig. Soil sampled with continuous macro core 5 foot liners. Hand augered from 4 to 8 ft bgs.

COORDINATES:
ELEVATION TOP OF CASING:
CASING BELOW SURFACE:

DRILLING COMPANY: VIRONEX
LICENSE NUMBER: C57# 705927

WATER LEVEL					START	FINISH
TIME				TIME	1130	1330
DATE				DATE	1/29/04	1/29/04
REFERENCE						

SURFACE CONDITIONS: Tank Backfill

DESCRIPTION BY: B. Gilbert

DRIVEN (INCHES)	RECOVER (INCHES)	BLOWS / 6" SAMPLER	OVA READING	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION	DETAILS
				0		Site grade.	
				2		Open tank excavation.	
				4		Ground surface in excavation during drilling.	
				6		SAND (Fill): dark yellowish brown (10YR 4/6), loose, very fine to fine sand, dry.	
				8	SP		
60		-		10			Cement Grout from ground surface in excavation to 31 feet bgs.
	48			11			
			113	12		Becomes wet.	
				14	ML	SANDY SILT: dark yellowish brown (10YR 4/4), stiff, low plasticity, very fine sand, dry.	
24	24	-		15			
			852	16		SILTY SAND: dark grayish brown (10YR 4/2), medium stiff, low plasticity fines, very fine to fine sand, damp.	
36	36	-		17	SM		
				18		Becomes moist.	
			146	19	ML	SANDY SILT: yellowish brown (10YR 5/8), stiff, low plasticity, very fine to fine sand, subangular, dry to damp.	
				20			

LOG OF SOIL BORING LOGS.GPJ ETIC.GDT 3/22/04

ETIC ENGINEERING

CLIENT	SITE NUMBER	LOCATION
WRBD	TMAPPLE	1619 Sycamore Ave Atwater, California

LOG OF SOIL BORING: **SB1**

DRIVEN (INCHES)	RECOVER (INCHES)	BLOWS / 6" SAMPLER	OVA READING	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION	DETAILS
48	48	-		21	ML		
				22			
			164	23		SILTY SAND: dark yellowish brown (10YR 4/6), dense, low plasticity fines, very fine to fine sand, well cemented, dry.	Cement Grout from ground surface in excavation to 31 feet bgs.
12	12	-		24			
24	24	-		25			
				26	SM	Rare coarse sand, damp.	
36	36	-		27			
				28			
				29			
12	12	-	91	30		Decrease in silt content, fine to medium sand.	
				31		Boring terminated at 31 feet bgs. Samples could not be removed from sampler due to expansive silt and intrusion of sand between liner and sampler at following depths: 20-23 ft, 27-30 ft bgs. Lithology observed at top and bottom of sampler.	
				32			
				33			
				34			
				35			
				36			
				37			
				38			
				39			
				40			
				41			
				42			
				43			
				44			
				45			

LOG OF SOIL BORING LOGS.GPJ ETIC.GDT 3/22/04

HWY 99/APPLEGATE INTERCHANGE
P.M. 15.60

ETIC ENGINEERING

CLIENT	SITE NUMBER	LOCATION
WRBD	TMAPPLE	1619 Sycamore Ave Atwater, California

LOG OF SOIL BORING: SB2

COORDINATES:
ELEVATION TOP OF CASING:
CASING BELOW SURFACE:

DRILLING COMPANY: VIRONEX
LICENSE NUMBER: C57# 705927

DRILLING AND SAMPLING METHODS: 6600 Geoprobe Track Rig. Soil sampled with continuous macro core 5 foot liners. Water sampled with 4 ft hydropunch. Hand augered from 5 to 9 ft bgs.

WATER LEVEL			
TIME			
DATE			
REFERENCE			

	START	FINISH
TIME	1350	1730
DATE	1/29/04	1/29/04

SURFACE CONDITIONS: Tank Backfill

DESCRIPTION BY: B. Gilbert

INCHES DRIVEN	INCHES RECOVER	BLOWS / 6" SAMPLER	OVA READING
60		-	
	24		
			124
24	24	-	
36	36	-	
			580

DEPTH (feet): 0–20 (columns: AIR SAMPLE, WATER SAMPLE, SOIL SAMPLE, RECOVERED, GRAPHIC LOG)

Depth (feet)	Graphic Log	Description
0		Site Grade.
2–3		Open tank excavation.
5		Ground surface in excavation during drilling.
5–13	SP	SAND (Fill): dark yellowish brown (10Y 4/6), loose, very fine to fine sand, dry.
13–16	ML	SANDY SILT: olive brown (2.5Y 4/4), stiff, low plasticity, very fine to fine sand, dry, rust staining.
16–19	SM	SILTY SAND: dark yellowish brown (10YR 4/4), dense, low plasticity fines, very fine to fine sand, well cemented, dry.
19–20	ML	SANDY SILT: dark yellowish brown (10YR 4/4), stiff, low plasticity, very fine to fine sand, dry.

DETAILS: Cement Grout from ground surface in excavation to 58 feet bgs.

LOG OF SOIL BORING LOGS.GPJ ETIC.GDT 3/22/04

ETIC ENGINEERING

CLIENT	SITE NUMBER	LOCATION
WRBD	TMAPPLE	1619 Sycamore Ave Atwater, California

LOG OF SOIL BORING: SB2

INCHES DRIVEN	INCHES RECOVER	BLOWS / 6" SAMPLER	OVA READING
24	24	-	
			445
36	36	-	
24	24	-	
			198
24	24	-	
			108
24	24	-	

DEPTH (feet): 21–45 (columns: AIR SAMPLE, WATER SAMPLE, SOIL SAMPLE, RECOVERED, GRAPHIC LOG)

Depth (feet)	Graphic Log	Description
20–21	ML	
21–29	SM	SILTY SAND: dark yellowish brown (10YR 4/6), medium dense, low plasticity fines, very fine to fine sand, subangular, dry.
27		Rare coarse sand, rust staining, dry.
28.5		Decrease in silt content, fine to medium sand, dry.

DETAILS: Cement Grout from ground surface in excavation to 58 feet bgs.

LOG OF SOIL BORING LOGS.GPJ ETIC.GDT 3/22/04

HWY 99/APPLEGATE INTERCHANGE
P.M. 15.60

ETIC ENGINEERING

CLIENT	SITE NUMBER	LOCATION
WRBD	TMAPPLE	1619 Sycamore Ave Atwater, California

LOG OF SOIL BORING: **SB2**

INCHES DRIVEN	INCHES RECOVER	BLOWS / 6" SAMPLER	OVA READING	DEPTH (feet)	AIR SAMPLE / WATER SAMPLE / SOIL SAMPLE / RECOVERED	GRAPHIC LOG	DESCRIPTION	DETAILS
				46				
				47				
				48				
				49				
				50				
				51				
				52				
				53				Cement Grout from ground surface in excavation to 58 feet bgs.
				54				
				55				
				56				
				57				
				58			Boring terminated at 58 feet bgs. Soil sampled to 31 feet bgs; hydropunch advanced to 58 feet bgs. Sample could not be removed from sampler due to intrusion of sand between liner and sampler at 29-31 ft bgs. Lithology observed at top and bottom of sampler.	
				59				
				60				
				61				
				62				
				63				
				64				
				65				
				66				
				67				
				68				
				69				
				70				

LOG OF SOIL BORING LOGS.GPJ ETIC.GDT 3/22/04

ETIC ENGINEERING

LOG OF SOIL BORING: **SB3**

CLIENT	SITE NUMBER	LOCATION
WRBD	TMAPPLE	1619 Sycamore Ave Atwater, California

DRILLING AND SAMPLING METHODS: 6600 Geoprobe Rig. Macro Core single tube. Continuous soil sampling with 5 foot liners. Hand augered to 5 feet bgs.

COORDINATES:
ELEVATION TOP OF CASING:
CASING BELOW SURFACE:
DRILLING COMPANY: VIRONEX
LICENSE NUMBER: C57# 705927

WATER LEVEL			
TIME			
DATE			
REFERENCE			

	START	FINISH
TIME	1150	1245
DATE	2/12/04	2/12/04

SURFACE CONDITIONS: Product Pipeline Excavation

DESCRIPTION BY: H. Berry

INCHES DRIVEN	INCHES RECOVER	BLOWS / 6" SAMPLER	OVA READING	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION	DETAILS
				0		FILL: pea gravel and sand.	
				1			
				2			
				3			
			13.6	4			
60	60	-		5		SAND: yellowish brown (10YR 5/4), poorly graded sand, medium dense, damp.	
				6			
				7	SP		
				8			
			2.5	9			
60	60	-		10			Cement Grout from surface to 30 feet bgs.
				11			
				12		SILTY SAND: yellowish brown (10YR 5/8), very fine to fine sand, dense, low plasticity fines, damp.	
				13	SM		
			54.2	14			
60	54	-		15			
				16		SANDY SILT: brown (7.5YR 4/4), hard, low plasticity, very fine to fine sand, dry.	
				17	ML		
				18			
			0.7	19		Becomes very hard.	
				20			

LOG OF SOIL BORING LOGS.GPJ ETIC.GDT 3/22/04

HWY 99/APPLEGATE INTERCHANGE
P.M. 15.60

ETIC ENGINEERING

CLIENT	SITE NUMBER	LOCATION
WRBD	TMAPPLE	1619 Sycamore Ave Atwater, California

LOG OF SOIL BORING: SB3

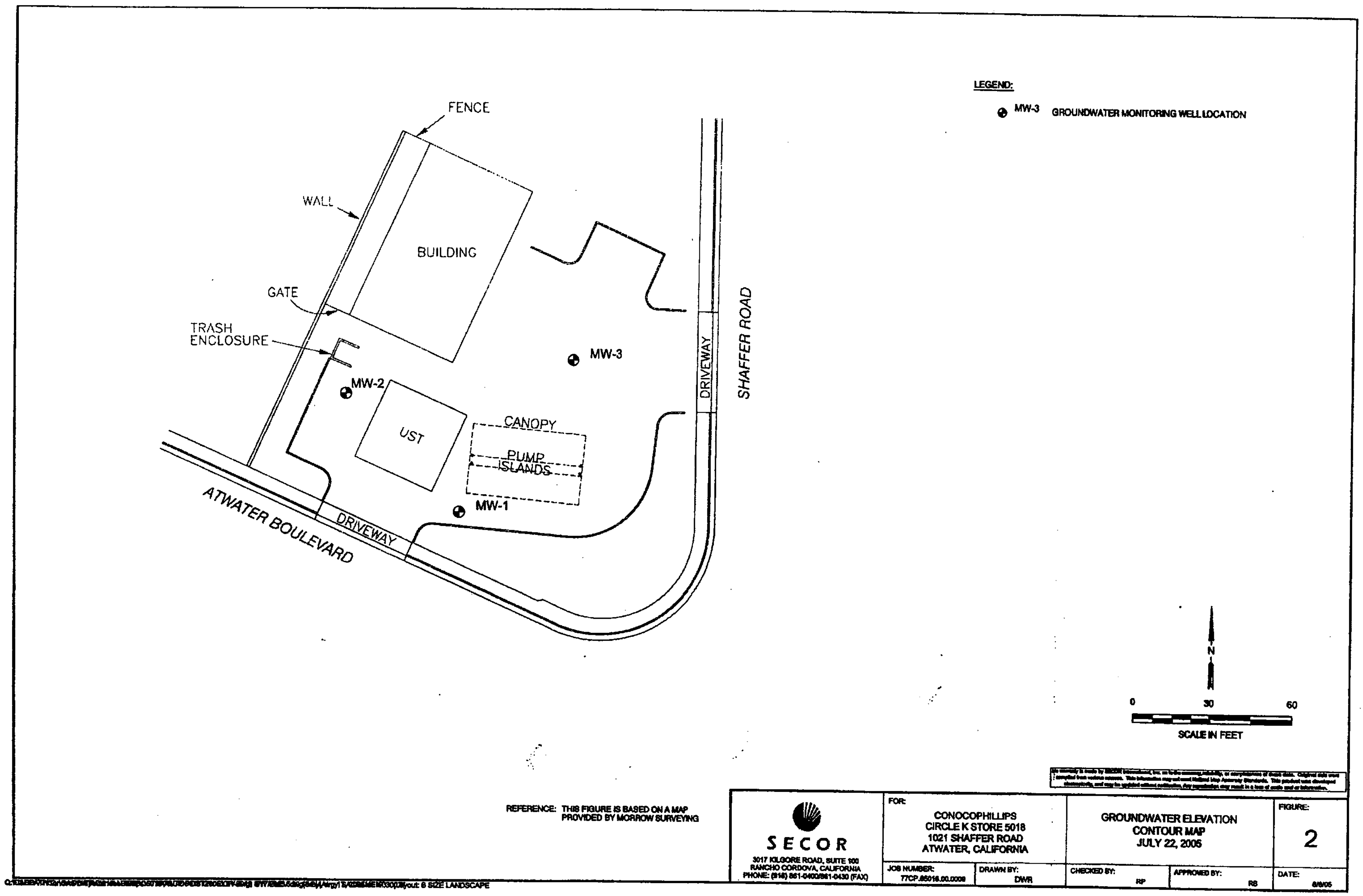
INCHES DRIVEN	INCHES RECOVER	BLOWS / 6" SAMPLER	OVA READING	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION
60	60			20		Sleeve stuck in sampler (20-24.5 ft bgs).
				21	ML	
				22		
				23		
			3.7	24		SILTY SAND: reddish brown (5YR 5/3), fine to medium sand, dense, low plasticity fines, damp.
60	60			25		
				26	SM	
				27		
				28		
			1.5	29		
				30		Boring terminated at 30 feet bgs. Sample could not be removed from sampler due to expansive silt at 20-24.5 ft bgs. Lithology observed at top and bottom of sampler.
				31		
				32		
				33		
				34		
				35		
				36		
				37		
				38		
				39		
				40		
				41		
				42		
				43		
				44		
				45		

Column headings also include: AIR SAMPLE, WATER SAMPLE, SOIL SAMPLE, RECOVERED.

Cement Grout from surface to 30 feet bgs.

LOG OF SOIL BORING LOGS.GPJ ETIC.GDT 3/22/04

HWY 99/APPLEGATE INTERCHANGE
P.M. 15.60



HWY 99/APPLEGATE INTERCHANGE
P.M. 15.60

SECOR

Logged By:	Date Drilled:	Drilling Contractor	Project Name:	Method/Equipment:	Well Number:
RP	5/26/05	CASCADE	Circle K Store #05018 Atwater, California	HSA CA SPLIT SPOON	MW-1

Boring Diam.(in.):	Surface Elev.(ft.):	Groundwater Depth (ft.):	Total Depth (ft.):	Drive wt.(lbs.):	Drop Dist.(in.):
8		∇ 50.5 First Water ▼ 41.5 Static Water	60.5	140	30

Well Construction	Depth, (ft.)	Blows/6"	Description	PID [PPM]	SAMPLE NAME
8" Well Box Concrete			**ASPHALT**		
			POORLY GRADED SAND (SP): Brown, fine-grained sand, loose, no hydrocarbon odor, (0,100,0).		
	5	10 10 12	Same as above, strongly cemented hardpan, (0,95,5).	0	MW-1 @5'
Neat Cement	10	11 12 14	**SILT WITH SAND (ML):** Pale brown, fine-grained sand, dry, low plasticity, no hydrocarbon odor, (0,20,80).	0	MW-1 @10'
2" SCH. 40 PVC Blank	15	9 12 12	**POORLY GRADED SAND (SP):** Pale brown, fine-grained sand, dry, no hydrocarbon odor, (0,100,0).	0	MW-1 @15'
		10 14 15	Same as above, light gray, loose.	0	MW-1 @19'
	20		**SILTY SAND (SM):** Reddish brown, fine-grained sand, dry, strongly cemented, no hydrocarbon odor, (0,75,25).	0	MW-1 @20'
	25	13 15 16	Same as above, medium to fine-grained sand, moist.	0	MW-1 @25'
	30	9 15 16	**POORLY GRADED SAND (SP):** Brown, fine-grained sand, dry, no hydrocarbon odor, (0,100,0).	0	MW-1 @30'

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Project No. **77CP.65018.00.0009** Date **6/29/05 RP**

Log of Well

5018 MW1-3.GPJ
LOG OF BOREHOLE

Figure

(sheet 1 of 2)

SECOR

Logged By:	Date Drilled:	Drilling Contractor	Project Name:	Method/Equipment:	Well Number:
RP	5/26/05	CASCADE	Circle K Store #05018 Atwater, California	HSA CA SPLIT SPOON	MW-1

Boring Diam.(in.):	Surface Elev.(ft.):	Groundwater Depth (ft.):	Total Depth (ft.):	Drive wt.(lbs.):	Drop Dist.(in.):
8		∇ 50.5 First Water ▼ 41.5 Static Water	60.5	140	30

Well Construction	Depth, (ft.)	Blows/6"	Description	PID [PPM]	SAMPLE NAME
Neat Cement					
Bentonite	35	9 12 12	**SILTY SAND (SM):** Yellowish brown, medium to fine-grained well graded sand, moist, moderately cemented, no hydrocarbon odor, (0,85,15).	0	MW-1 @35'
#2/12 Sand	40	10 10 13	**POORLY GRADED SAND (SP):** Brown, fine-grained sand, moist, no hydrocarbon odor, (0,100,0).	0	MW-1 @40'
▼					
2" SCH. 40 PVC 0.020" Slotted Screen	45	11 11 15	**SILTY SAND (SM):** Reddish brown, medium to fine-grained sand, moist, moderately cemented, no hydrocarbon odor, (0,75,25).	0	MW-1 @45'
∇	50	10 14 16	Same as above.	0	MW-1 @50'
	55	10 10 12	**WELL GRADED SAND (SW):** Yellowish brown to olive brown, coarse to fine-grained sand, saturated, no hydrocarbon odor, (0,95,5).	0	MW-1 @55'
Threaded End Cap	60	9 11 12	Same as above, very micaceous, heaving sands.	0	MW-1 @60'

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Project No. **77CP.65018.00.0009** Date **6/29/05 RP**

Log of Well

5018 MW1-3.GPJ
LOG OF BOREHOLE

Figure

(sheet 2 of 2)

HWY 99/APPLEGATE INTERCHANGE
P.M. 15.60

SECOR

Logged By:	Date Drilled:	Drilling Contractor	Project Name:	Method/Equipment:	Well Number:
RP	5/26/05	CASCADE	Circle K Store #05018 Atwater, California	HSA CA SPLIT SPOON	MW-2

Boring Diam.(in.):	Surface Elev.(ft.):	Groundwater Depth (ft.):	Total Depth (ft.):	Drive wt.(lbs.):	Drop Dist.(in.):
8		▽ 50.5 First Water ▼ 47 Static Water	56.0	140	30

Well Construction	Depth, (ft.)	Blows/6"	Description	PID [PPM]	SAMPLE NAME
8" Well Box Concrete			ASPHALT **POORLY GRADED SAND (SP):** Brown, fine-grained sand, dry, loose, no hydrocarbon odor, (0,100,0).		
	5	12 16 17	Same as above, strongly cemented hardpan, (0,95,5).	0	MW-2 @5'
Neat Cement	10	11 12 14	**SILTY SAND (SM):** Grayish brown, fine-grained sand, dry, no hydrocarbon odor, (0,80,20).	0	MW-2 @10'
2" SCH. 40 PVC Blank	15	11 13 14	**POORLY GRADED SAND (SP):** Light yellowish brown, fine-grained sand, dry, no hydrocarbon odor, (0,95,5).	0	MW-2 @15'
	20	12 12 13	Same as above, light gray, (0,100,0).	0	MW-2 @19'
			SILTY SAND (SM): Light reddish brown, fine-grained sand, dry, moderately cemented, no hydrocarbon odor, (0,75,25).	0	MW-2 @20'
	25	15 16 17	**SILTY SAND (SM):** Reddish brown, fine-grained sand, dry, strongly cemented, no hydrocarbon odor, (0,85,15).	0	MW-2 @25'
Bentonite	30	13 15 17	Same as above, medium to fine-grained sand, moist, moderately cemented.	0	MW-2 @30'

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Project No. **77CP.65018.00.0009** Date **6/29/05 RP**

Log of Well

5018 MW1-3.GPJ
LOG OF BOREHOLE

Figure

(sheet 1 of 2)

SECOR

Logged By:	Date Drilled:	Drilling Contractor	Project Name:	Method/Equipment:	Well Number:
RP	5/26/05	CASCADE	Circle K Store #05018 Atwater, California	HSA CA SPLIT SPOON	MW-2

Boring Diam.(in.):	Surface Elev.(ft.):	Groundwater Depth (ft.):	Total Depth (ft.):	Drive wt.(lbs.):	Drop Dist.(in.):
8		▽ 50.5 First Water ▼ 47 Static Water	56.0	140	30

Well Construction	Depth, (ft.)	Blows/6"	Description	PID [PPM]	SAMPLE NAME
Bentonite					
#2/12 Sand	35	14 15 20	Same as above, tough drilling.	0	MW-2 @35'
2" SCH. 40 PVC 0.020" Slotted Screen	40	12 14 16	**POORLY GRADED SAND (SP):** Brown, 20% medium 80% fine-grained sand, moist, no hydrocarbon odor, (0,95,5).	0	MW-2 @40'
▼	45	12 12 14	**SILTY SAND (SM):** Reddish brown, poorly graded medium to fine-grained sand, moist, tough drilling, no hydrocarbon odor, (0,60,40).	0	MW-2 @45'
▽	50	11 13 13	Same as above, wet. **POORLY GRADED SAND (SP):** Yellowish brown to olive brown, fine-grained sand, saturated, no hydrocarbon odor, (0,95,5).	0	MW-2 @50'
Threaded End Cap	55	12 14 16	Same as above.	0	MW-2 @56'
	60				

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Project No. **77CP.65018.00.0009** Date **6/29/05 RP**

Log of Well

5018 MW1-3.GPJ
LOG OF BOREHOLE

Figure

(sheet 2 of 2)

HWY 99/APPLEGATE INTERCHANGE
P.M. 15.60

SECOR

Logged By:	Date Drilled:	Drilling Contractor	Project Name:	Method/Equipment:	Well Number:
RP	5/27/05	CASCADE	Circle K Store #05018 Atwater, California	HSA CA SPLIT SPOON	MW-3

	Boring Diam.(in.):	Surface Elev.(ft.):	Groundwater Depth (ft.):	Total Depth (ft.):	Drive wt.(lbs.):	Drop Dist.(in.):
	8		∇ 47 First Water ▼ 42 Static Water	55.5	140	30

Well Construction	Depth, (ft.)	Blows/6"	Description	PID [PPM]	SAMPLE NAME
8" Well Box Concrete			ASPHALT		
			POORLY GRADED SAND (SP): Brown, fine-grained sand, dry, loose, no hydrocarbon odor, (0,100,0).		
	5	10 11 15	Same as above, dark brown, moderately cemented, (0,95,5).	0	MW-3 @5'
Neat Cement	10	12 12 14	**SILTY SAND (SM):** Yellowish brown, fine-grained sand, dry, no hydrocarbon odor, (0,80,20).	0	MW-3 @10'
2" SCH. 40 PVC Blank	15	15 16 22	Same as above, brown, damp.	0	MW-3 @15'
	20	12 15 16	Same as above, yellowish brown and gray, (0,60,40).	0	MW-3 @20'
	25	12 12 14	Same as above, red, moderately cemented, (0,85,15).	0	MW-3 @25'
Bentonite	30	13 16 18	**POORLY GRADED SAND (SP):** Orangish brown, fine-grained sand, moist, no hydrocarbon odor, (0,95,5).	0	MW-3 @30'

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Project No. 77CP.65018.00.0009 Date 6/29/05 RP

Log of Well

5018 MW1-3.GPJ
LOG OF BOREHOLE

Figure

(sheet 1 of 2)

SECOR

Logged By:	Date Drilled:	Drilling Contractor	Project Name:	Method/Equipment:	Well Number:
RP	5/27/05	CASCADE	Circle K Store #05018 Atwater, California	HSA CA SPLIT SPOON	MW-3

	Boring Diam.(in.):	Surface Elev.(ft.):	Groundwater Depth (ft.):	Total Depth (ft.):	Drive wt.(lbs.):	Drop Dist.(in.):
	8		∇ 47 First Water ▼ 42 Static Water	55.5	140	30

Well Construction	Depth, (ft.)	Blows/6"	Description	PID [PPM]	SAMPLE NAME
Bentonite #2/12 Sand	35	10 11 15	**SILTY SAND (SM):** Orangish brown, medium to fine-grained sand, moist, moderately cemented, no hydrocarbon odor, (0,85,15).	0	MW-3 @35'
2" SCH. 40 PVC 0.020" Slotted Screen	40	12 14 14	Same as above.	0	MW-3 @40'
▼	45	10 12 14	Same as above, light yellowish brown, fine-grained sand, not cemented, (0,70,30).	0	MW-3 @45'
∇	50	10 10 14	Same as above, saturated.	0	MW-3 @50'
Threaded End Cap	55	8 11 12	**WELL GRADED SAND (SW):** Yellowish brown, coarse to fine-grained sand, saturated, heaving sands, no hydrocarbon odor, (0,100,0).	0	MW-3 @55'
	60				

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Project No. 77CP.65018.00.0009 Date 6/29/05 RP

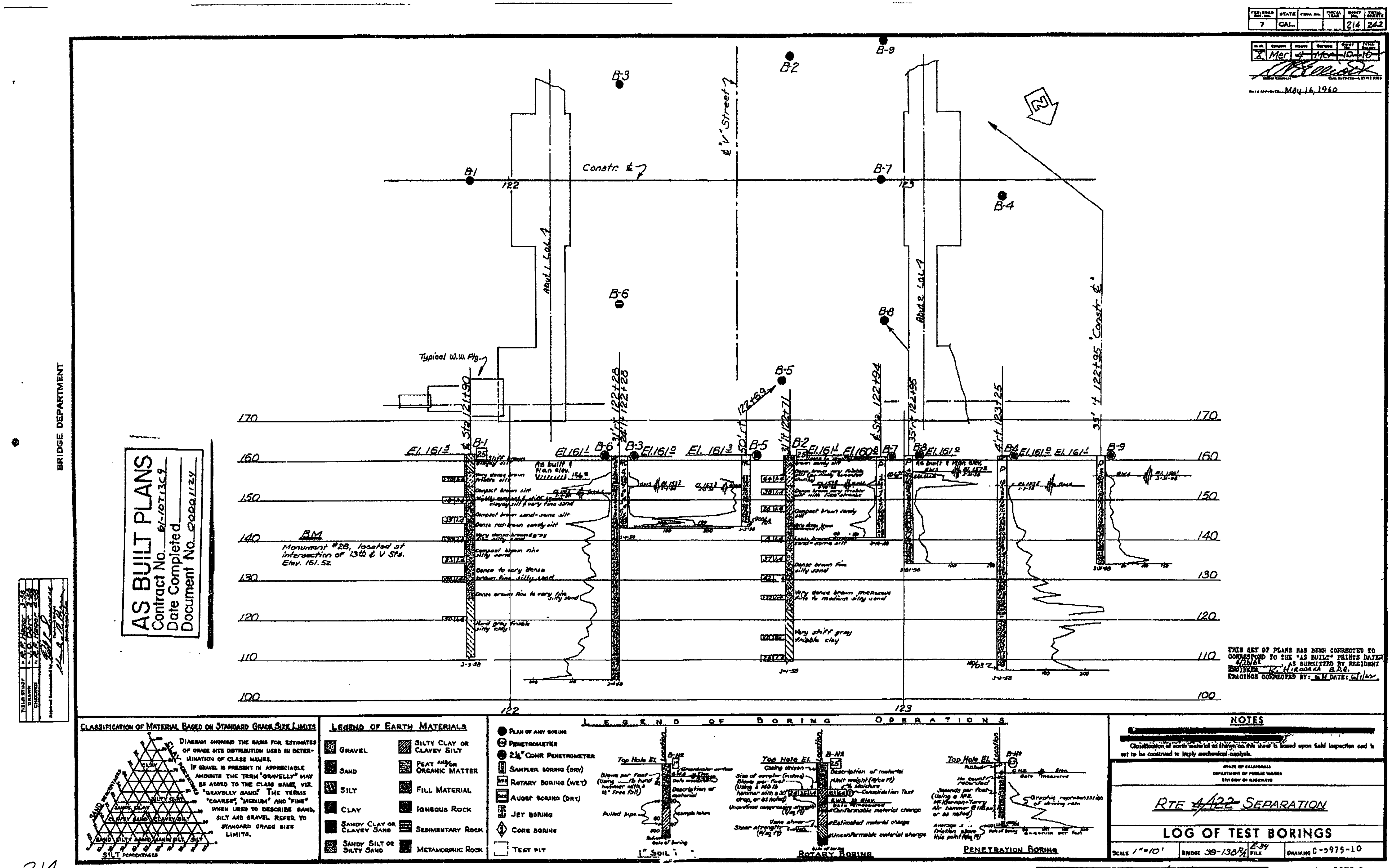
Log of Well

5018 MW1-3.GPJ
LOG OF BOREHOLE

Figure

(sheet 2 of 2)

HWY 99/APPLEGATE INTERCHANGE
P.M. 15.60



214

PREL. DRAWING NO. P-5975

PR-5975-2

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

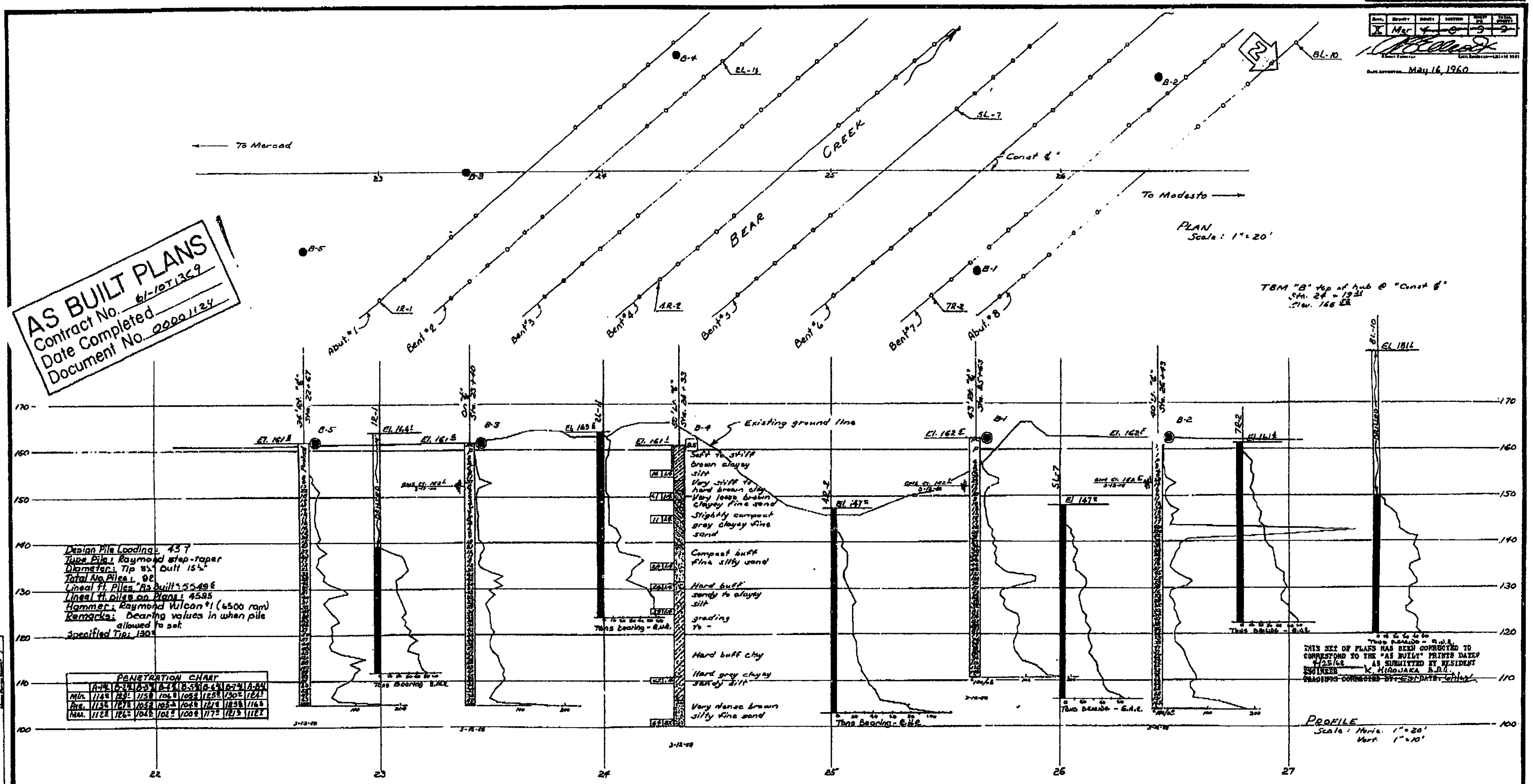
DATE ______ SIGNATURE ______ TITLE ______

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
7	CAL.			223	242

DIST.	COUNTY	ROUTE	SECTION	SHEET NO.	TOTAL SHEETS
X	Mer	4	B	5	2

May 16, 1960

BRIDGE DEPARTMENT



Design Pile Loading: 45 T
Type Pile: Raymond step-taper
Diameter: Tip 8½" Butt 15½"
Total No. Piles: 92
Lineal ft. Piles "As Built": 5549±
Lineal ft. piles on Plans: 4595
Hammer: Raymond Vulcan #1 (6500 ram)
Remarks: Bearing values in when pile allowed to set.
Specified Tip: 130±

PENETRATION CHART

	A-1	B-2	B-3	B-4	B-5	B-6	B-7	A-8
Min.	114^{8}	129^{1}	115^{8}	106^{0}	105^{5}	125^{5}	130^{2}	124^{1}
Ave.	113^{6}	127^{8}	105^{8}	105^{4}	104^{8}	121^{8}	125^{8}	116^{8}
Max.	112^{2}	126^{2}	104^{8}	102^{5}	100^{4}	117^{2}	121^{3}	112^{2}

THIS SET OF PLANS HAS BEEN CORRECTED TO CORRESPOND TO THE "AS BUILT" PRINTS DATED 4/25/62 AS SUBMITTED BY RESIDENT ENGINEER K. Hirouaka R.E.
TRACINGS CORRECTED BY: E.S. DATE: 6/62

CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

Diagram showing the bars for estimates of grade size distribution used in determination of class names.
If gravel is present in appreciable amounts the term "gravelly" may be added to the class name, viz. "gravelly sand". The terms "coarse", "medium" and "fine" when used to describe sand, silt and gravel refer to standard grade size limits.

LEGEND OF EARTH MATERIALS

- Gravel
- Sand
- Silt
- Clay
- Sandy Clay or Clayey Sand
- Sandy Silt or Silty Sand
- Silty Clay or Clayey Silt
- Peat and/or Organic Matter
- Fill Material
- Igneous Rock
- Sedimentary Rock
- Metamorphic Rock

LEGEND OF BORING OPERATIONS

- Plan of any boring
- Penetrometer
- 2½" Cone Penetrometer
- Sampler boring (dry)
- Rotary boring (wet)
- Auger boring (dry)
- Jet boring
- Core boring
- Test pit

Steel Tube — Rotary Boring — Penetration Boring

NOTES

[redacted]
Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

BEAR CREEK

LOG OF TEST BORINGS

SCALE As Noted | BRIDGE 39-132 R/L | FILE E-39 | DRAWING C-5H95-9
PR-5895-3

REL. DRAWING NO. R5895

223

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

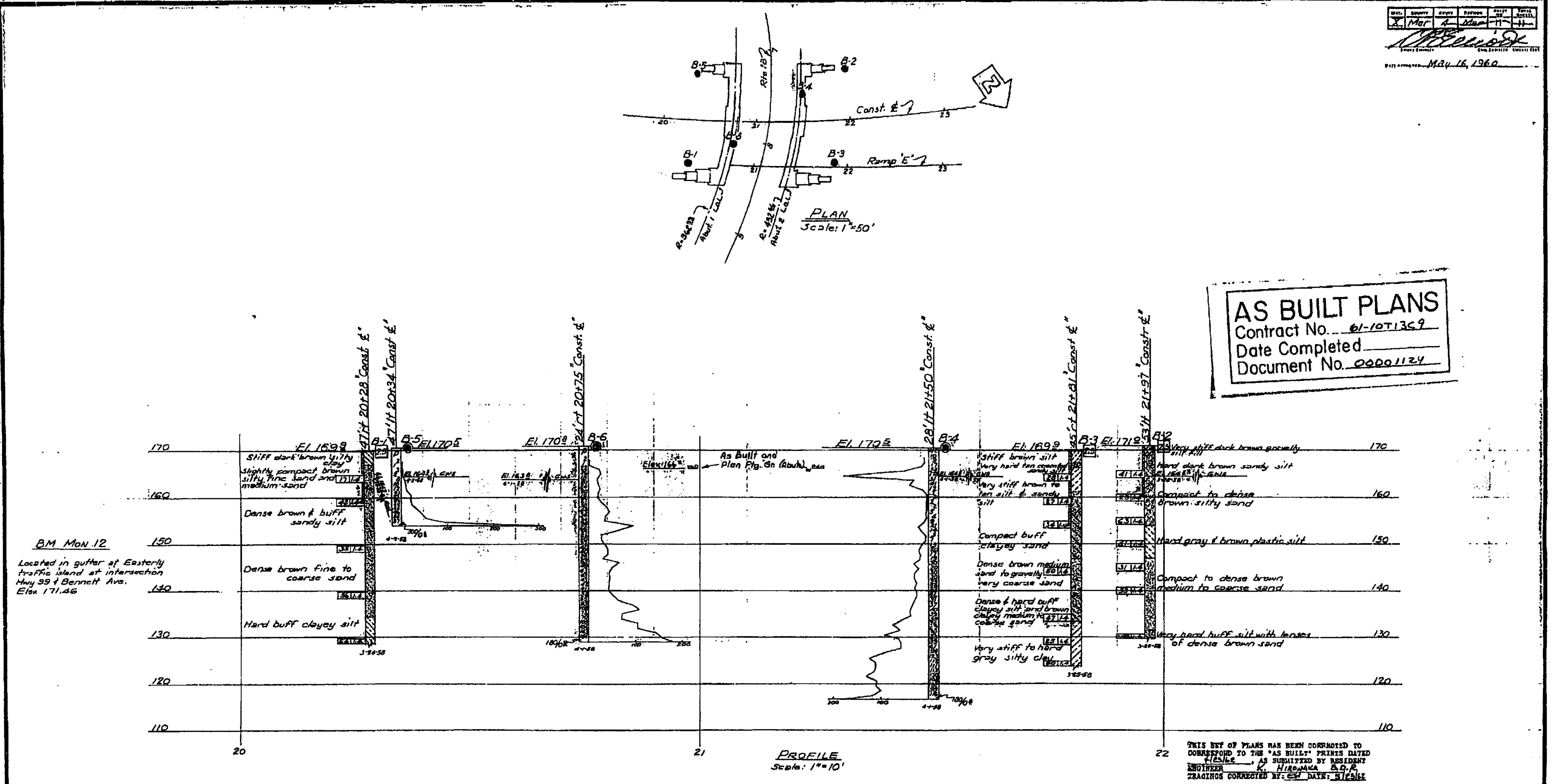
DATE ______ SIGNATURE ______ TITLE ______

FED. ROAD DIV. NO.	STATE			SHEET NO.	TOTAL SHEETS
7	CAL.			118	242

X Mer 4 Mer 11

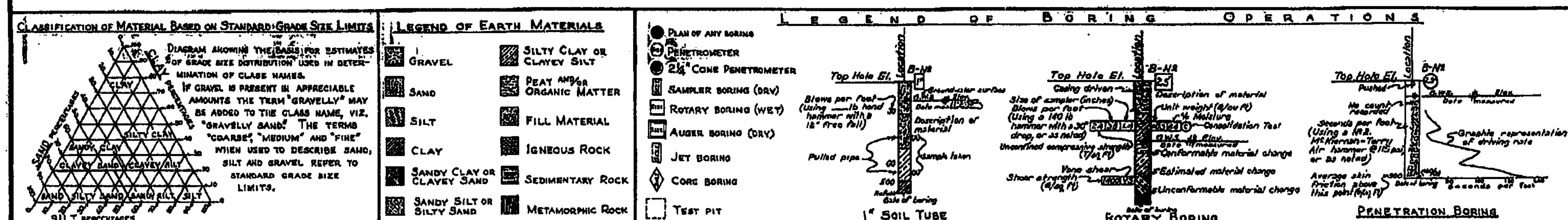
May 16, 1960

AS BUILT PLANS
Contract No. 61-10T1369
Date Completed
Document No. 00001124



BRIDGE DEPARTMENT

THIS SET OF PLANS HAS BEEN CORRECTED TO CORRESPOND TO THE "AS BUILT" PRINTS DATED 1/25/62, AS SUBMITTED BY RESIDENT ENGINEER K. HIRONAKA B.D.R.
TRACINGS CORRECTED BY: EH DATE: 5/23/62



NOTES

[redacted]
Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

RTE. ~~4/48~~ SEPARATION

LOG OF TEST BORINGS

SCALE As shown	BRIDGE 39-140 R/L	FILE E-137	DRAWING C-6007-11

PREL. DRAWING NO. P-6007 72

PR-6007-3

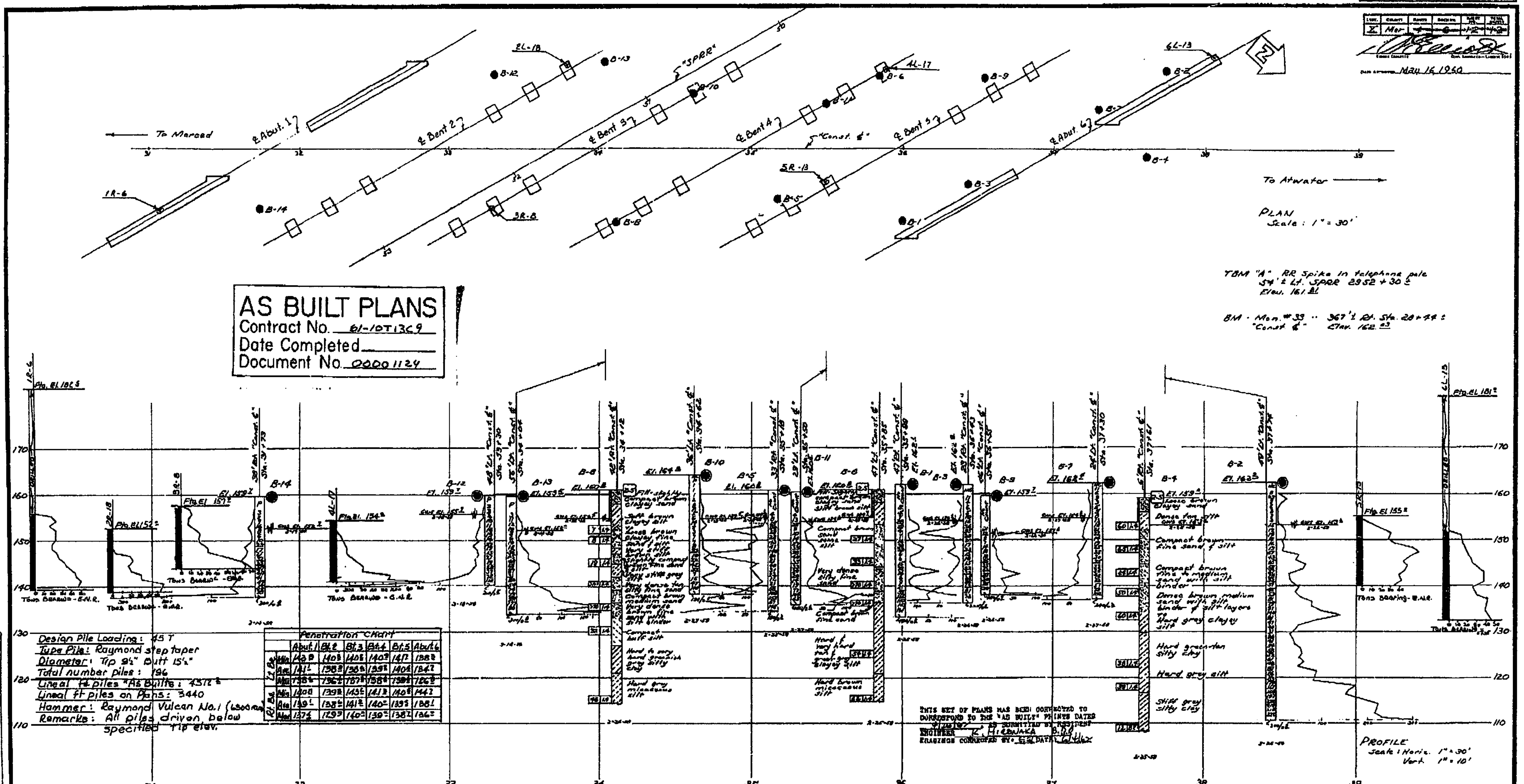
118

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE ______ SIGNATURE ______ TITLE ______

MICROFILM - STATE OF CALIFORNIA - DEPARTMENT OF PUBLIC WORKS - MICROFILM

Fed. Road Dist. No.	State	Proj. No.	Fiscal Year	Sheet No.	Total Sheets
7	CAL.			235	243



AS BUILT PLANS
Contract No. 01-10T1369
Date Completed
Document No. 00001124

Design Pile Loading: 45 T
Type Pile: Raymond step taper
Diameter: Tip 9½" Butt 15½"
Total number piles: 196
Lineal ft piles "As Builts": 4512 ±
Lineal ft piles on Plans: 3440
Hammer: Raymond Vulcan No. 1 (L300 RPM)
Remarks: All piles driven below specified tip elev.

Penetration Chart		Abut. 1	Bt. 2	Bt. 3	Bt. 4	Bt. 5	Abut. 6
Lt. Bt.	Min	143.0	140.3	140.5	140.9	141	138.8
	Ave	141.1	138.9	138.6	139.5	140.4	134.7
	Max	138.4	136.2	137.8	138.4	138.1	126.9
Rt. Bt.	Min	140.0	139.8	143.5	141.3	140.8	144.7
	Ave	139.1	138.5	141.8	140.0	139.5	136.1
	Max	137.4	129.7	140.0	139.0	138.7	136.0

BRIDGE DEPARTMENT

CLASSIFICATION OF MATERIAL BASED ON STANDARD GRAIN SIZE LIMITS

Diagram showing the basis for estimates of grain size distribution used in determination of class names.

If gravel is present in appreciable amounts the term "gravelly" may be added to the class name, viz. "gravelly sand". The terms "coarse", "medium" and "fine" when used to describe sand, silt and gravel refer to standard grade size limits.

LEGEND OF EARTH MATERIALS

Gravel — Silty Clay or Clayey Silt — Sand — Peat and/or Organic Matter — Silt — Fill Material — Clay — Igneous Rock — Sandy Clay or Clayey Sand — Sedimentary Rock — Sandy Silt or Silty Sand — Metamorphic Rock

LEGEND OF BORING OPERATIONS

Plan of any boring — Penetrometer — 2½" Cone Penetrometer — Sampler boring (dry) — Rotary boring (wet) — Auger boring (dry) — Jet boring — Core boring — Test pit

1" Soil Tube — Rotary Boring — Penetration Boring

NOTES

[redacted]

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STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

WEST MERCED OVERHEAD

LOG OF TEST BORINGS

Scale As Noted | Bridge 39-131 R/L | File E-39 | Drawing C-5839-12

PREL. DRAWING NO. F-5839

PR-5839-6

Date approved May 16, 1960

235

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

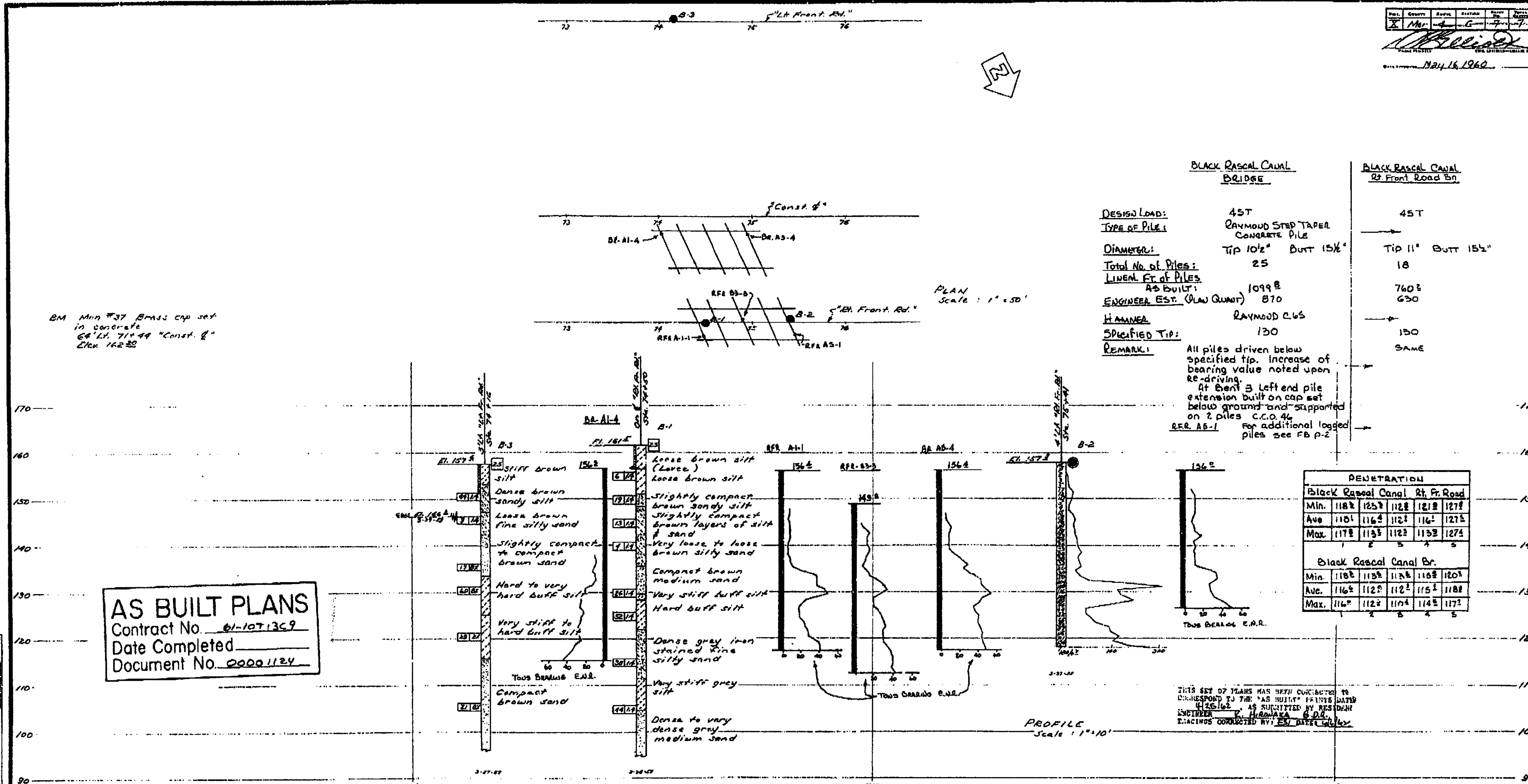
DATE ______ SIGNATURE ______ TITLE ______

FED. ROAD DIV. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
7	CAL.			242	242

DIST.	COUNTY	ROUTE	SECTION		
X	Mer.	4	G	9	7

May 16, 1960

BRIDGE DEPARTMENT



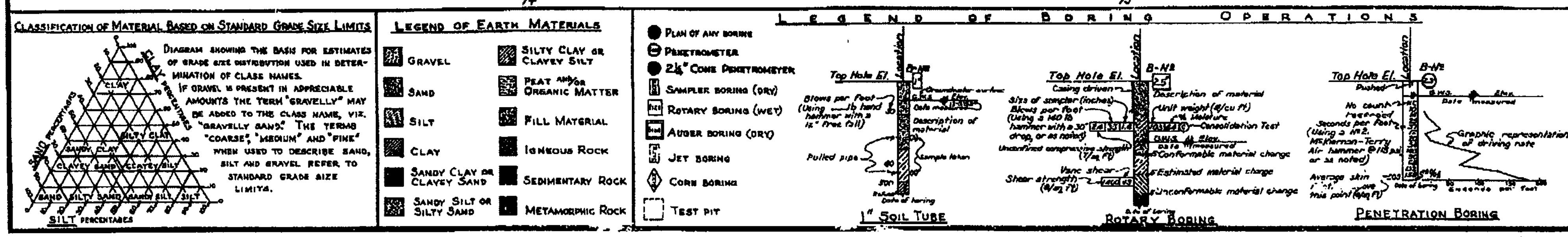
BLACK RASCAL CANAL BRIDGE / BLACK RASCAL CANAL Rt. Front Road Br.

	BLACK RASCAL CANAL BRIDGE	BLACK RASCAL CANAL Rt. Front Road Br.
DESIGN LOAD:	45T	45T
TYPE OF PILE:	RAYMOND STEP TAPER CONCRETE PILE	→
DIAMETER:	TIP 10½" BUTT 15⅛"	TIP 11" BUTT 15½"
Total No. of Piles:	25	18
LINEAL FT. of PILES AS BUILT:	1099	760
ENGINEER EST. (PLAN QUANT.)	870	630
HAMMER	RAYMOND C.65	→
SPECIFIED TIP:	130	130
REMARK:	All piles driven below specified tip. Increase of bearing value noted upon re-driving. At Bent 3 Left end pile extension built on cap set below ground and supported on 2 piles C.C.O. 46. R.F.R. A5-1 For additional logged piles see FB P-2	SAME

PENETRATION					
Black Rascal Canal Rt. Fr. Road					
Min.	118^{2}	125^{7}	112^{8}	121^{8}	127^{8}
Ave	110^{1}	116^{4}	112^{3}	116^{1}	127^{5}
Max.	117^{8}	113^{5}	112^{3}	113^{8}	127^{4}
	1	2	3	4	5
Black Rascal Canal Br.					
Min.	118^{2}	113^{2}	113^{2}	116^{8}	120^{3}
Ave.	116^{4}	112^{2}	112^{2}	115^{1}	118^{2}
Max.	116^{8}	112^{8}	110^{4}	114^{5}	117^{3}
	1	2	3	4	5

THIS SET OF PLANS HAS BEEN CORRECTED TO CORRESPOND TO THE "AS BUILT" PRINTS DATED 4/26/62 AS SUBMITTED BY RESIDENT ENGINEER K. HIRONAKA B.D.E. TRACINGS CORRECTED BY: ESJ DATE: 12/6/62

AS BUILT PLANS
Contract No. 61-10T1309
Date Completed
Document No. 00001124



NOTES

[redacted]

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STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

BLACK RASCAL CANAL

LOG OF TEST BORINGS

SCALE As Noted | BRIDGE 39-10 R/L & 39C-37 | FILE E-39 | DRAWING C-6490-7

PRN. DRAWING NO. P-6490

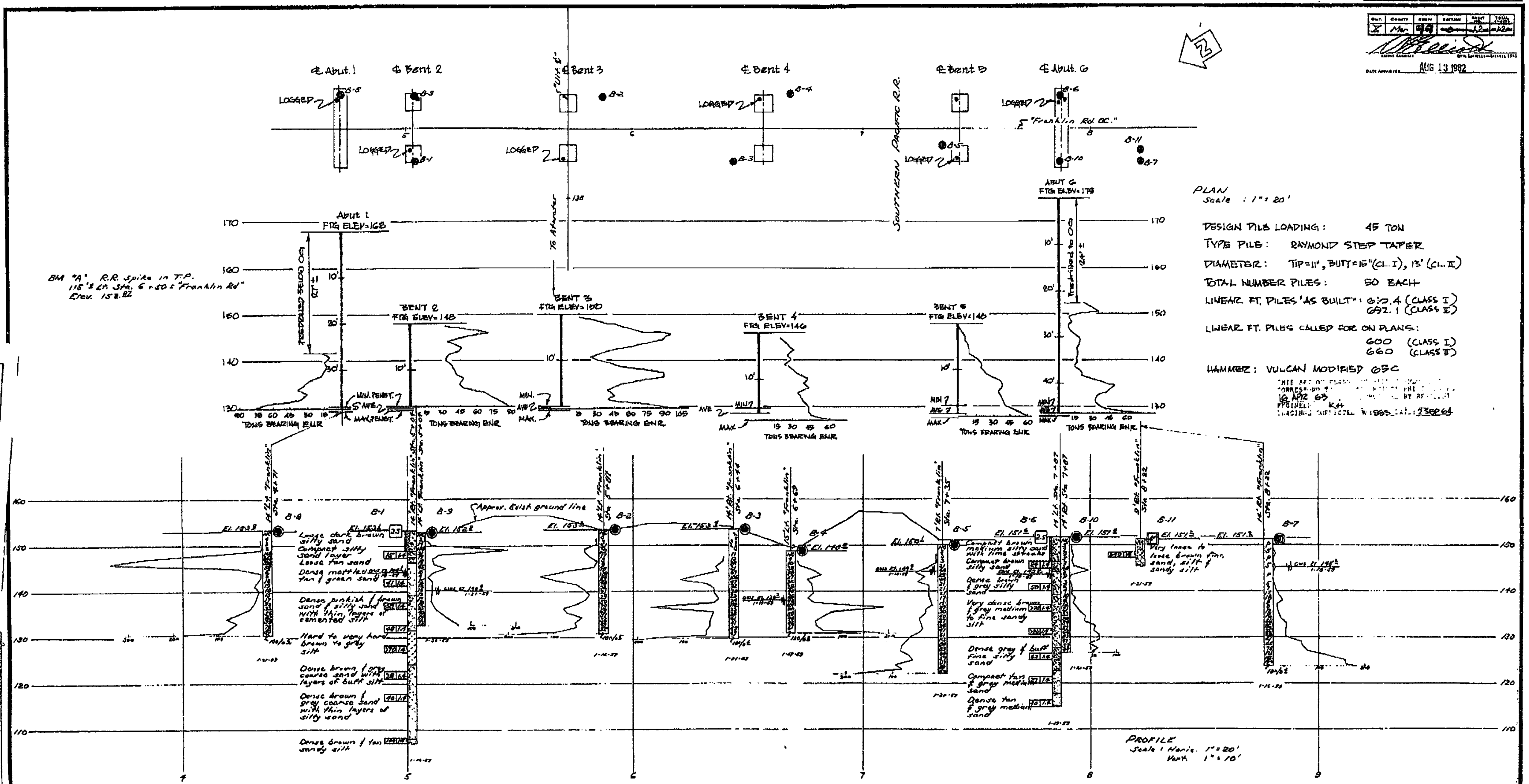
PR-6436-4
PR-6450-3

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE ________ SIGNATURE ________ TITLE ________

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
7	CAL.			276	290

AUG 13 1962



DESIGN PILE LOADING: 45 TON
TYPE PILE: RAYMOND STEP TAPER
DIAMETER: TIP=11", BUTT=15" (CL. I), 13" (CL. II)
TOTAL NUMBER PILES: 50 EACH
LINEAR FT. PILES "AS BUILT": 612.4 (CLASS I), 692.1 (CLASS II)
LINEAR FT. PILES CALLED FOR ON PLANS: 600 (CLASS I), 660 (CLASS II)
HAMMER: VULCAN MODIFIED 65C

16 APR 63

CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

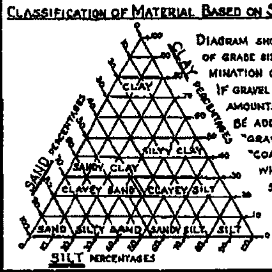


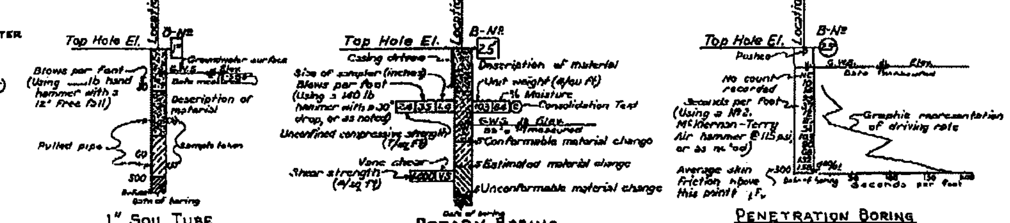
DIAGRAM SHOWING THE BASIS FOR ESTIMATES OF GRADE SIZE DISTRIBUTION USED IN DETERMINATION OF CLASS NAMES.
IF GRAVEL IS PRESENT IN APPRECIABLE AMOUNTS THE TERM "GRAVELLY" MAY BE ADDED TO THE CLASS NAME, VIZ. "GRAVELLY SAND." THE TERMS "COARSE," "MEDIUM" AND "FINE" WHEN USED TO DESCRIBE SAND, SILT AND GRAVEL REFER TO STANDARD GRADE SIZE LIMITS.

LEGEND OF EARTH MATERIALS

- GRAVEL
- SAND
- SILT
- CLAY
- SANDY CLAY OR CLAYEY SAND
- SANDY SILT OR SILTY SAND
- SILTY CLAY OR CLAYEY SILT
- PEAT AND/OR ORGANIC MATTER
- FILL MATERIAL
- IGNEOUS ROCK
- SEDIMENTARY ROCK
- METAMORPHIC ROCK

LEGEND OF BORING OPERATIONS

- PLAN OF ANY BORING
- PENETROMETER
- 2½" CONE PENETROMETER
- SAMPLER BORING (DRY)
- ROTARY BORING (WET)
- AUGER BORING (DRY)
- JET BORING
- CORE BORING
- TEST PIT



NOTES

[redacted]
Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

FRANKLIN ROAD OVERCROSSING

LOG OF TEST BORINGS

SCALE As Noted | BRIDGE 39-84 | FILE | DRAWING C-4332-12

PREL. DRAWING NO. P-4332 | 20 | 18

PR-4332-4

276

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